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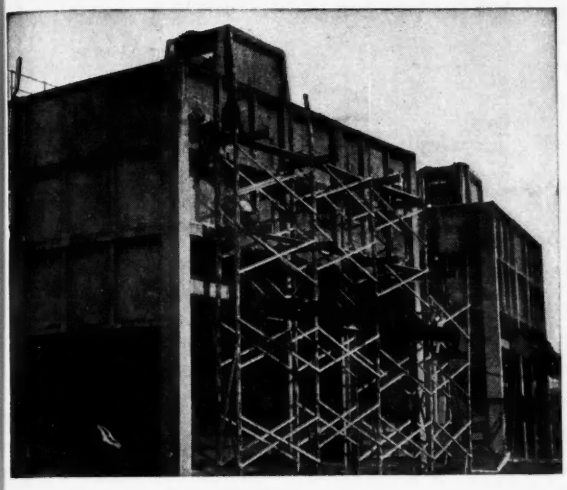

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Gas Journal

104th YEAR OF PUBLICATION

EDITOR: NORMAN S. SMITH, B.Sc. (Gas Eng.)

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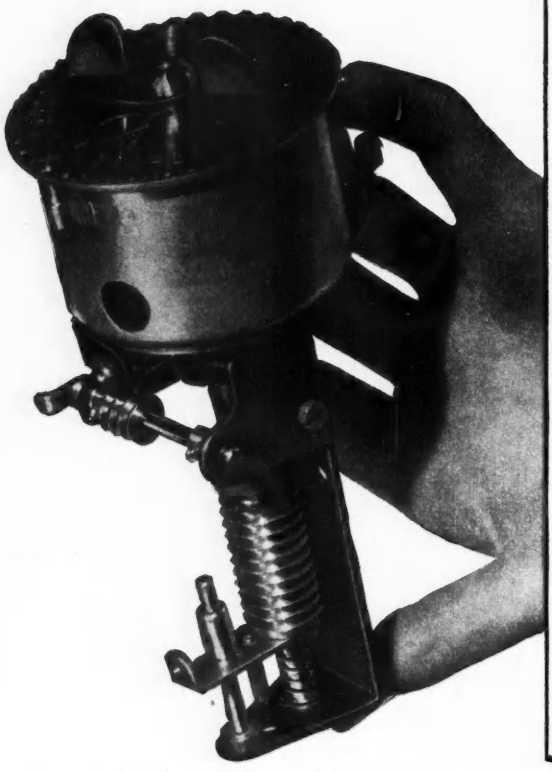

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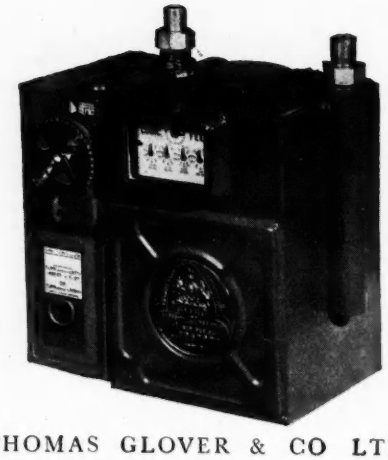

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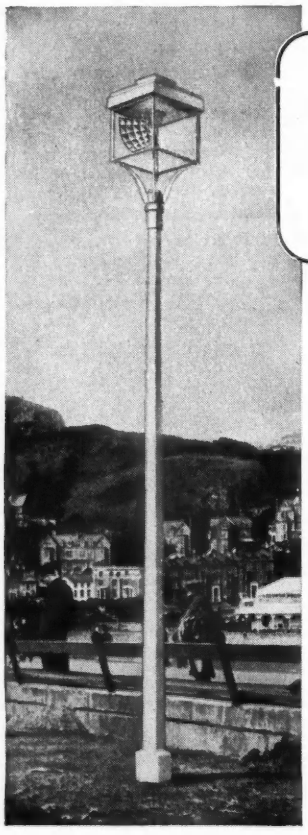

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GAS JOURNAL

VOL. 270. NO. 4635 104TH YEAR APRIL 2, 1952

TOWARDS A NATIONAL FUEL POLICY

IN October last we reported fully in our columns the proceedings of a two-day conference staged in London with the blessing of the Ministry of Fuel and Power to discuss the fuel and power shortage confronting this country. It was a most outspoken conference strongly urging action and much criticism was directed to the shortcomings of the British Electricity Authority in failing to encourage the installation of back pressure turbines and the interlinking of surplus power with the grid, and its prodigality and carelessness in building-up a heating load for which electricity is not fitted and which imposes unnecessary hardship on industry and gross waste of capital, coal, and industrial productivity. At the conference the use of electricity for domestic heating was described in many terms, among which were 'calamitous' and 'fantastic.' And we may recall the comments of Sir Ewart Smith, who addressed the meeting on the requirements for a national fuel policy. Making a plea for bold action he mentioned that it costs £100 per kWh in generating and distributing plant. A modern council house, all electric, has a capacity of 12 kW—on a conservative estimate, 7 kW. Allow for the diversity of demand and bring the peak capacity down to 5 or 4, or even 3 kW. To the number of new houses (200,000) add conversions of existing houses, hotels, and so on (100,000). There is no need to take away the 'number you first thought of' to appreciate what this means at times of peak load when industry is crying out for power.

Since that conference there has been considerable activity in the House of Commons in debate on fuel problems and the formulation of fuel policy. This has been evidenced in our Parliamentary reports, and it will have been seen that one of the most energetic and enthusiastic members who are pressing the Government to adopt a cohesive fuel policy embracing the three nationalised industries of coal, gas, and electricity, and also bringing oil into the overall picture, is Mr. Gerald Nabarro, Conservative Member for the Kidderminster Division. At his invitation last week we went to the House to discuss his views on the matter as crystallised in a booklet he has written with the title 'Ten Steps to Power.' This booklet, in which the points made are incisive and certainly controversial, is obtainable from the Saint Catherine Press, and it is destined to have a wide circulation. It is evident, too, that Mr. Nabarro and his co-workers do not intend to rely only on the written word. They are a determined group with a definite aim—that the Government must be shaken into action and not allowed continuously to produce White Papers and then shelve the recommendations they contain. This 'prodding,' Mr. Nabarro stressed, is non party political. Let us examine briefly some of the proposals and arguments put forward at this stage.

In 1922 we exported 82 mill. tons of coal. Last year we exported 8 mill. tons and imported 1¼ mill. tons on the 'coals to Newcastle' principle. Today the domestic consumer has a pittance, industry is starved, and the concomitant of the virtual loss of our export trade is a disastrous adverse balance in our overseas payments. This is the result of drift over the years, and 'Britain's decline will be based upon the misuse of coal.' The National Coal Board's plan to yield 240 mill. tons of coal a year must be completed, it is argued, not in 1965 but in 1960—and the Government must provide the financial and economic sinews to see that done. Mr. Nabarro's purpose is to evolve the terms and conditions of a national fuel and power policy the application of which will enable the deficit of 44 mill. tons of coal envisaged in 1960 (allowing for exports of 25 mill. tons) to be met. 'We mine more coal, or we burn coal more efficiently, or both. If we fail, Britain dies of economic inanition.' It is on the proposals for using coal more efficiently that we shall touch here.

Adequate electricity supply is indispensable to rising industrial productivity, but it is advanced without reservation that the use of electricity for continuous space and water heating must be curtailed in view of its 'fabulous' extravagance in terms of coal consumption

and in terms of capital investment. It is a luxury we cannot afford if our factories are to be brought to a standstill through power cuts and the expansion of industrial production is to be stultified. Two weapons must be used to drive electricity consumption off space and water heating—the fiscal weapon to impose high indirect taxes on heating appliances and the tariff weapon to assure that the domestic need for electric light and non-heating purposes is met at a low price per unit but all above that level at a sufficiently high price to discourage the use of electricity for space and water heating. And in comparing the merits of gas and electricity for providing heat it is of fundamental importance to recognise that gas requires, for the provision of a given amount of heat, only approximately one-third of the capital investment sum required by the electricity industry for the same amount of heat. 'It is imperative,'—we quote from 'Ten Steps to Power'—'that action at Government level supersedes the sectional outlook of the individual nationalised gas and electricity industries and impels the use of gas appliances for new domestic space and water heating and urban cooking, never electricity, and the use of electricity for lighting, never gas.' It is maintained, too, that the gas industry has not yet assumed its proper responsibilities in regard to coke markets. Capital investment should be quickened in the gas industry, if necessary at the expense of electricity, to facilitate partial transfer of intermittent domestic heating and the cooking load to gas. Gas, it is argued, should be considered as a balancing factor between coal and electricity and should carry increasing responsibility for the nation's heating and cooking services.

It is put forward that coal and coke should provide the continuous winter domestic heating load, and that there should be two dozen types only of high thermal efficiency coal, coke, and gas appliances for space and water heating and cooking, these to be called 'British Standards,' sold free of tax. According to the plan, 'the domestic market can contribute an overall saving of 4 mill. tons of coal a year by 1960 and every home in the country will be warmer and more comfortable.' Industry, by the elimination of much faulty and wasteful coal burning, could, it is estimated, save 30 mill. tons of coal a year by 1960; while a separate 10-year railway coal-efficiency plan, to be evolved by the Minister of Transport, could secure a reduction of coal consumption by 5 mill. tons per annum. Summing up, Mr. Nabarro asks for a White Paper enunciating a national fuel and power policy; supporting legislation as required to enact the proposals; and a National Fuel and Power Trust to carry the policy into practical effect, deal with apportionment of capital investment, co-ordinate development and sales policy, and ensure the maximum conservation of national coal, heat, light, and power resources.

We have set out a few of the major suggestions from Mr. Nabarro's 'Ten Steps to Power.' The booklet makes many others and it does not pull its punches. The solution of the fuel and power problem is not, we think, as simple as the booklet would make it appear, but it is both refreshing and encouraging to have this vigorous approach and the assurance that the matter will not be allowed to rest. Unquestionably the policy of drift is one inevitably spelling disaster, and this energetic movement should do something to focus attention on this aspect, precipitate action, and, we hope, bring the fuel and power industries into a more rational and cohesive pattern to national advantage.

THE DISTILLATION OF WOOD

As we mentioned in our editorial of March 26, Professor F. E. Simon has called attention to the vast influx of solar energy which he says may become even more important than nuclear fission in meeting the world demand for controllable power and heat. The most hopeful prospect of controlling and adapting solar energy to human needs, he suggests, may be by way of the growing plant. And that might be linked in some way with the demand for timber which itself leads to systematic afforestation. Man may one day drop altogether the methods of 'robber economy' and replant trees as fast as he cuts them down. Now, in the management of the forest there is a continuous process of pruning and thinning, making available vast quantities of 'waste' wood of comparatively small dimensions. Thus this subject of the distillation of wood may become of more urgent importance than it is today. We are justified in considering it here because most of the modern methods involve some form of carbonisation.

In our issue of July 25, 1945, we presented a translation from the French of an article describing how during the occupation wood was carbonised in continuous vertical retorts at Niort (in the central forest region) in much the same way as the coal for which they were designed. We gather that the wood (walnut logs) was cut up and carbonised in separate retorts in the proportion of about 25% wood, and that it served for a considerable period to augment the short supplies of coal. In a preliminary test in one retort the yield of charcoal was 18% by weight of wood and of gas 5,900 cu.ft. per ton at a calorific value of about 420 B.Th.U. In normal working with the gas streams mixed it was concluded that the calorific value of the wood gas was somewhat lower, 340-390 B.Th.U., and that its density would be about 0.75. The condensates were kept separate—mainly on account of the destructive effect of acetic acid on iron work. The tar is described as 'fluid when hot and similar in appearance to coal tar. Cold, it becomes very viscous.' The liquors are described as yellow in colour on condensation, darkening strongly on cooling, becoming dark brown. They contain 8% to 9%, by weight, of acetic acid. It is interesting to note, in view of the exothermic reaction referred to later, that combustion chamber temperatures of 1,200°C. could with advantage have been lower, since at this figure the charcoal obtained was a little too much 'burnt off.' The carbonising plant consisted of normal Glover-West 35 in. retorts.

But it was not a process of this sort which Professor Simon had in mind. We suppose he contemplated the intensive cultivation of some giant hogweed (hogweed

has been seriously suggested as a practicable source of power alcohol) or perhaps some entirely different plant, growing with tropical exuberance in a soil heavily fertilised and in an atmosphere enriched with carbon dioxide—we confess to some difficulty in visualising the enriched atmosphere! Plant forms would be selected to yield alcohol or other high calorific liquid fuel at a high rate in proportion to weight and to the area under cultivation.

We are some way off that, but Dr. E. Charles, in an article of which we publish an abstract on p. 45, shows that during the last decade or so significant progress has been made in the treatment of wood for the production of charcoal and many valuable chemical substances. The methods of the charcoal burner are left far behind. These are still used in the forest, though in improved apparatus, but six tons of wood is consumed in the production of one ton of charcoal.

The distillation of wood on modern principles has moved from the forest to the factory. It is not practised for the production of fuel gas of town quality and therefore full advantage can be taken of the interesting exothermic reaction which takes place in the temperature range 250°-270°C. to 325°-350°C. And market conditions permit free use of the gas evolved for the internal heating of the charge in the retort, which appears to be the direction of recent developments. The average yields of weight of hardwood, dried, are 33% charcoal, 7% fatty acids, 2% methylene, 15% tar and tar oils with 22% gas of which no details are given. From the liquid condensates a series of substances is extracted mainly by the use of suitable solvents. The emphasis, however, is rather on acetic acid and acetates than on alcohol.

In the forest regions of France five factories are devoted to the distillation of the hard woods—hornbeam, beech, and oak appear to be favourites—the two largest at Clamecy and Prèmery in the Department of la Nièvre accounting for 85% of the hard wood carbonised by factory methods. In the Landes resinous woods are treated, especially for the production of a particularly valuable tar. Altogether the distillation of wood in France has developed into 'a modest industry, often misunderstood,' which, to compete with synthetic products, has had to evolve a modernised technique of its own.

WHERE THE FOOD GOES

We have often wondered what happened to the cooked foods following public demonstrations. In the past there has apparently been no uniform method of disposal, but the Home Service Division of the Gas Council has, at the request of several area boards, sought and obtained from the Ministry of Food an official ruling. The Ministry has stated that it is most anxious that no waste of food should occur. Wherever possible after demonstrations the dishes should be offered as 'tastes' to members of the public, and any cooked food not consumed in that way should go to a hospital or similar institution. This can be done by notifying the local food office, which will make the necessary arrangements for disposal. Food used for display, which has been on view for any considerable time, is assumed to be unfit for human consumption and should be treated as pig-bin waste. On no account should rationed or controlled foods obtained for the purpose of demonstrations be sold to the public. The Ministry's communication concludes: 'Our main concern is that no food is wasted and in this connection you are referred to S. R. and O. 40, No. 1424, which deals with the question of food (waste).' Regarding the display of cooked dishes the Home Service Division has reported to the Ministry that placing food on display, except under cover and for very limited periods, is avoided as this is apt to create criticism by the public, and therefore it is extremely unlikely that any food allocated to gas boards for demonstrations will reach the pig bin.

OXFORD GASWORKS

One of the most difficult problems inherited by the Southern Gas Board on vesting day was that of reconciling the task of satisfying the growing demand for gas at Oxford with the rejection by the House of Lords of the former Oxford and District Gas Company's scheme for extending the works on the south side of the Thames. Protracted negotiations with the city and county authorities, the Board's assertion a few months ago that the only hope of averting failures in gas supplies lay in installing new vertical retorts and ancillary plant on the existing site, and the ultimate decision not to carry to a higher level the city planning committee's refusal of planning permission for the extension are all now familiar history. The latest episode—a pledge by the Board as soon as circumstances permit to remove the works from the riverside—while it may gratify opponents of the extension proposals does not carry the Board very much further along the road to a solution. The text of the statement is as follows:

'It is the intention and fixed policy of the Southern Gas Board to move altogether from the present site of the Oxford gasworks, both north and south of the Thames, as soon as circumstances permit and present difficulties of removal and of the construction of new gasworks elsewhere can be overcome in order to provide Oxford consumers with gas by other means and from other sources. But it is not possible to give undertakings as to date or to announce a definite timetable.

'The Board's hope is to cease to use the North works for gas-making in the course of the present year, though it may be necessary to reserve the retort house there as a standby for an emergency. It would be the Board's aim to vacate the North site within 10 years.

'There are obvious difficulties in carrying out the complete transfer of works to another site, but the Board has no intention in the meantime of enlarging the present installations.'

The Board has handled a difficult situation with great tact, and it now remains for those who have effectively opposed all efforts to extend the present works to co-operate in expediting developments on a new site.

Output of coal and lignite in France in February was 4,789,000 metric tons, against 5,191,000 metric tons in January. Production in the Saar was 1,276,000 metric tons, compared with 1,428,000 metric tons in the previous month. The average production on a working-day basis for France and the Saar combined was 250,660 metric tons, a slight fall from the record rate of 255,555 metric tons achieved in January. Output per manshift underground in February, at 1,335 kgs., was slightly below the record level of 1,337 kgs. achieved in November, 1951.

Personal

Mr. Charles Macdonald, for many years Contracts Manager of Wailes Dove Bitumastic, Ltd., has been appointed to the Board of Directors.

◇ ◇ ◇

Mr. J. S. Exley, formerly Publicity Manager of Richard Sutcliffe, Ltd., has been appointed Continental Representative; **Mr. V. Quaintrell** has been appointed Chief Buyer; and **Mr. P. Woodward** has been appointed Publicity Manager.

◇ ◇ ◇

Dr. R. S. Andrews, formerly Chief Technical Officer of the Gas and Fuel Corporation of Victoria, Australia, has been appointed Chairman of the Corporation. He was President of the Australian Gas Institute for the year 1951.

◇ ◇ ◇

Mr. J. Sapsford, Chief Technical Assistant at Bankside works of the Hull group, has been appointed by the North Eastern Gas Board to the position of Works Manager at the Tingley works. Mr. Sapsford previously service with the Rochdale Corporation Gas Department, Humphreys and Glasgow, Ltd., and Hartley Main Collieries, Cramlington, Co. Durham. He has been at Hull since 1947.

◇ ◇ ◇

Mr. Brian C. Smith, formerly Works Engineer of the Middlesbrough unit of the Northern Gas Board, has been appointed Chief Technical Assistant with the Huddersfield/Halifax group of the North Eastern Gas Board. Mr. Smith entered the gas industry in 1941 with the Brighouse Corporation Gas Department, subsequently joining Humphreys and Glasgow Ltd., before going to Middlesbrough in 1948.

◇ ◇ ◇

Mr. K. E. Chambers, Works Engineer, Peterborough District, Eastern Gas Board, has been appointed Deputy Engineer and Manager at Leamington Spa, West Midlands Gas Board. Other recent appointments by the West Midlands Board include those of **Mr. R. Lucas,** A.I.M.T.A., formerly at Board headquarters, to be Divisional Accountant, Walsall; and **Mr. F. J. Healey** to be Deputy Divisional Distributing Engineer, Birmingham.

◇ ◇ ◇

Mr. R. J. Philp, Hon. Secretary and Treasurer of the Waverley Association of Gas Managers, has been the recipient of a presentation as a token of esteem for his valuable services rendered to the Association over the past 30 years. In making the presentation, Mr. J. H. Fulton, Kirkcaldy, last President of the Waverley Association, referred to the long period during which Mr. Philp had guided the Association in his capacity as Hon. Secretary and Treasurer, and expressed thanks on his own behalf and on behalf of former presidents for his assistance during their terms of office. In reply, Mr. Philp mentioned that he had on many occasions felt like retiring from the Secretaryship, but that he had really enjoyed the work so much that he was easily persuaded to carry on. He referred to several outstanding occasions and prominent personalities in the Association during his term of office and expressed thanks to the members of the Committee and of the Association for the presentation.

◇ ◇ ◇

Mr. C. C. Wood, Divisional General Manager of the Leicester and Northants. Division of the East Midlands Gas Board has been appointed Divisional General Manager of the Sheffield and Rotherham Division, as from April 1. Mr. Wood, who is 49 years of age, started his career in 1918 with the Wellingborough Gas Light Company, after receiving his general education at Wellingborough School and Northampton Town and County School. He was articled to the late Mr. J. T. Lewis, General Manager of the Wellingborough Gas Light Company, and shortly after the completion of his training he was appointed Assistant Engineer to the Company. In 1933 he became Engineer, rising to General Manager in 1945. After nationalisation of the industry in 1949, he was appointed Manager of the Northampton Sub-Division of the East Midlands Gas Board and became General Manager of the Leicester and Northants. Division in May, 1950. At Sheffield and Rotherham he succeeds Mr. E. H. Harman, whose appointment as Deputy Chairman of the East Midlands Gas Board was announced on March 12.

Mr. John Corbet Woodall (youngest son of the late Sir Corbet Woodall) who for many years has been a Director of Lambert Bros. (Walsall), Ltd., and acted for them in the South of England, is retiring from active participation in the sales organisation of the Company, but is retaining his seat on the Board.

◇ ◇ ◇

Mr. Felix L. Levy, a Director of George Cohen, Sons & Co., Ltd., and its associated companies, has been elected President of the London and Southern Scrap Iron and Non-Ferrous Metal Merchants' Association. This office was for a number of years held by his father, Mr. Lawrence Levy, who was also a Director of George Cohen.

Obituary

Mr. Francis T. Kennard, who retired last December from the post of English Manager of N.V. Amsterdamsche Gasmeterfabrick 'Glovermeters,' Amsterdam, a subsidiary of Thomas Glover & Co., Ltd., died at his home at Folkestone on March 17, aged 77. He joined Thomas Glover & Co., Ltd., in 1894 and prior to his appointment to 'Glovermeters' in 1934 he had occupied positions as Cashier and Commercial Manager.

◇ ◇ ◇

Dr. John Forbes Cameron, who, before the nationalisation of the gas industry, was Chairman of the Cambridge University and Town Gas Light Company, died at Cambridge on March 21 after a long illness. Dr. Cameron, who was 78 years of age, was educated at Perth Academy and Gonville and Caius College, Cambridge. He became a second Wrangler in 1898, and was a Smith's prize man in 1900. A year previously he had been elected a Fellow of the College, and became a lecturer in 1900, a tutor in 1909, Senior Tutor in 1919, Bursar in 1921, and was elected Master of the College in 1928, a position which he occupied with distinction for 20 years. From 1933 until 1935 he was Vice-Chancellor of the University. A member of the Council of the Senate from 1924 until 1944, during the first world war he served at the Ministry of Munitions, and was Vice-Chairman of the Arbitration Tribunal of the Ministry of Labour. Dr. Cameron had many friends in the gas industry, and joined the Board of the former Cambridge Company in 1928, and later in the same year became Chairman of Directors, continuing in that office until 1949. Taking a great interest in the co-partnership scheme he presided over the committee of management, and was also President of the Cambridge Company's recreation club. Among his other activities in the life of Cambridge he was the Chairmanship of the University Press.

1952 'Journal' Directory

THE following changes have been notified during the past month. To keep the information in the 1952 edition of the *Gas Journal Calendar and Directory* up to date readers are invited to note these alterations (together with the appropriate adjustments relating thereto in the 'Personnel' section of the *Directory*, pp. 141-156):

Page 29.—EAST MIDLANDS: E. H. Harman, B.SC., *Deputy Chairman* (vice Sydney Smith, whose appointment as *Chairman* has already been announced).

„ 29 and 30.—SHEFFIELD AND ROTHERHAM: C. C. Wood, *Div. Gen. Man.* (vice E. H. Harman).

„ 29 and 32.—LEICESTER AND NORTHANTS: Delete C. C. Wood, *Div. Gen. Man.*

„ 52.—EASINGWOLD: Delete F. R. Coleman, *Dist. M.* (retired).

„ 115.—WEST MIDLANDS: D. C. Shaw, *Deputy Coke Manager.*

„ 118.—SOUTH STAFFORDSHIRE MOND: W. E. Plevin, *E.* (vice A. Robinson).

„ A1 and A244.—AMAL, LTD.: Change of address: Holdford Road, Witton, Birmingham, 6. T/N Birchfields 4571; T/A Amalcarb (Phone) Birmingham.

Diary

April 3.—Midland Juniors: Half day visit to C and W. Walker, Ltd., Donnington.

April 4.—North of England Section, I.G.E.: Spring Meeting at Sunderland.

April 4.—London and Southern Juniors: 'Any Questions,' to be answered by a panel of members representing the manufacturing, distribution, and utilisation sides of the gas industry. 178, Edgware Road, 6.30 p.m.

April 9.—Scottish G.C.C.: Edinburgh.

April 9.—Yorkshire and Manchester Juniors: Joint meeting. Visit to the works of Wilsons and Mathiesons, subsidiary of Radiation Ltd., Armley, Leeds; 'Large Apparatus,' Alec Russell, 10.45 a.m.

April 12.—Scottish Juniors (Eastern): Paper by R. H. Foston (Perth).

April 15.—London and Southern Section, I.G.E.: 'Post-War Developments at the Southall works of the North Thames Gas Board,' D. C. Bertram (Station Engineer, Southall, North Thames). 17, Grosvenor Crescent, S.W. 1, 2.30 p.m.

April 17.—Wales Juniors: Annual General Meeting, Llandrindod Wells. Presidential Address, S. G. Meade; 'Carbonisation Efficiencies,' J. Newman.

April 17-18.—Scottish Association of Gas Managers: First Annual Meeting, Shandon Hydro Hotel, Rhu Helensburgh. (Golf and bowls on April 17; Presidential Address of E. G. Smith, Glasgow, on April 18).

April 18.—Scottish Juniors (Western): Annual General Meeting and election of officers; Royal Technical College, Glasgow.

April 19.—Western Juniors.—Annual General Meeting and Presidential Address. Bristol.

April 22-25.—Women's Gas Federation: Conference on Food, Health, and Hygiene, followed by 17th Annual Meeting, Stratford-on-Avon. (For full programme see *Journal* of February 13, p. 407.)

April 23.—Eastern Juniors: Morning visit to Cambridge gasworks; afternoon visit to Cambridge Instrument Co., Ltd.

April 23.—Institute of Fuel: Annual Corporate Meeting, Institution of Mechanical Engineers, Storey's Gate, S.W.1; 4.30 p.m. Presidential Address of Dr. G. E. Foxwell, 5.30 p.m.

April 24.—Midland Juniors: President's Day. Coventry.

April 24.—Institute of Fuel: Annual Luncheon, Connaught Rooms, W.C.2, 12.30 for 1 p.m.

April 24.—North Thames G.C.C.: Westminster City Hall, Charing Cross Road, 2.30 p.m.

April 25.—Manchester and District Section, I.G.E.: Annual General Meeting, Grand Hotel, Manchester, preceded by luncheon at 12.30 p.m. for 1 p.m.

April 25.—Midland Section, I.G.E.: Annual General Meeting, Birmingham.

April 25.—London and Southern Juniors: Jubilee Celebration Dinner, Caxton Hall.

April 25.—Institution of Chemical Engineers: Thirtieth Annual Corporate Meeting, May Fair Hotel, 11 a.m. Presidential Address, 'Chemical Engineering at the Cross Roads,' Sir Harold Hartley. Annual Dinner, 7 for 7.30 p.m.

April 26.—London and Southern Juniors: General Meeting, East Greenwich, 11.30 a.m. Presidential Address, followed by luncheon; inspection of East Greenwich works, 2.15 p.m.

April 29.—Midland Juniors: Annual General Meeting.

April 29.—East Midlands G.C.C.: George Hotel, Grantham, 11.30 a.m.

May 1-3.—East Midlands Gas Board: Staff Conference, Skegness.

May 2.—North of England Section, I.G.E.: Annual General Meeting, Durham, 11 a.m. Address by G. E. Currier, Vice-President, Institution of Gas Engineers.

News in Brief

Scarborough Corporation has not accepted terms submitted by the North-Eastern Gas Board for public street lighting during the lighting season commencing April 1.

The Following I.G.E. Communications are now available from the Institution offices, price 2s. 6d. per copy, post free: Nos. 395/190, 396/191, and 398/193—being papers or reports presented and discussed at the last Autumn Research Meeting.

Water Heater Lectures.—Mr. F. M. Taylor, Chief Instructor of Ascot Gas Water Heaters, Ltd., has just finished a tour of the East Midlands. Besides visiting the various gas undertakings throughout the area, he gave lectures at the technical colleges at Lincoln and Loughborough. Each lecture started by the projection of the Ascot film 'Symbol of Service' Mr. Taylor then gave a short address on the latest modification of Ascot heaters and outlined the great advance in instantaneous gas water heating made possible by the introduction of the Ascot balanced flue heater. The session ended with a general discussion and, judging by the quality and quantity of questions asked, the series of lectures proved their worth as a service of value to those interested in modern water heating by gas.

Stirling County Council has decided to pay for repairs to cookers in council houses. This reverses a decision taken a year ago. Mr. F. Crawford, Airth, said tenants were too poor to pay the cost of repairs and cookers were lying unused. Sir George Wilson, Killearn, said the Council gave the cheapest houses in Scotland and yet had the highest repair bill.

The Annual Corporate Meeting of the Institute of Fuel will be held on April 23 at 4.30 p.m. in the Lecture Hall of the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1. This will be followed at 5.30 p.m. by the Presidential Address of Dr. G. E. Foxwell entitled 'Fuel Technology and Civilisation.' The annual luncheon will be on April 24 at 12.30 for 1 p.m. at the Connaught Rooms, W.C.2, when the principal guest and speaker will be Sir John Hacking (President of the Institution of Electrical Engineers).

Keighley Crematorium Plans.—Keighley Borough Architect has submitted plans to the parks and cemeteries committee for a crematorium, adjoining the chapel at Oakworth Cemetery, at a total estimated cost of £17,802, which sum includes a contribution of £1,550 to the North Eastern Gas Board towards the capital cost of laying a gas main to the crematorium.

The Gas Council Stand at the Ideal Home Exhibition, Olympia, was visited on March 20 by the Parliamentary Secretary to the Ministry of Fuel and Power, Mr. L. W. Joynson-Hicks, who was accompanied by Mrs. Joynson-Hicks. They were particularly interested in the cooker display, and also examined the water heating section and the display of solid fuel appliances.

The Industrial Light Oils Committee, which represents 17 national trade associations whose members use light hydrocarbon oils in industrial processes, has lodged a protest with the Chancellor of the Exchequer against the additional 7½d. a gal. tax on their essential raw materials. The Committee had already lodged an appeal for the abatement of the existing tax and pending a decision on that appeal, it requests that the additional 7½d. a gal. tax be withdrawn.

VISIT TO THE NEW NORTHENDEN METER WORKS

A REPRESENTATIVE gathering of officials of the North Western Gas Board headed by the Deputy Chairman, Mr. A. Henshall, recently inspected the new Northenden meter works of Alder and Mackay, Ltd.

The well laid-out modern factory which is built on the Wythenshawe Estate is now busily engaged in the manufacture of ordinary and prepayment meters for the West of England area.

The firm recently transferred its Manchester works from Meadow Street, Moss Side, to the modern factory on the new estate, and by doing so has not only increased its production of meters, but has provided more employment in Wythenshawe, and at the same time reduced considerably the travelling distance to work of its employees, half of whom already live on the Garden Estate.

To ensure smooth production and high output, the new factory is supplied with regular deliveries of meter parts from the firm's main works in Edinburgh. Provision has been made for a 50% extension of the premises which will be carried out when the necessary permits and licences are obtained.

The visitors were impressed with the compact and efficiently run factory and spent an interesting morning seeing meters in the various stages of assembly and on test.

At an informal luncheon at the Grand Hotel, Manchester, afterwards, Mr. H. E. Bennet, Joint Managing Director, welcomed the guests. Mr. Bennet said the potential output of the new works was 300 meters a week. Their main difficulty was in getting skilled sheet metal workers, owing to the large intake of these workers by aircraft factories and armament firms. It was hoped, however, that with the 50% extension to the factory, along with the help of their Edinburgh and Nelson works, they would be able to produce a sizeable quantity of meters. He was pleased to welcome Mr. Henshall and his colleagues and thanked them for having found time to honour them with a visit.

Mr. Henshall thanked the Directors for the opportunity they had been given to see this further step in the development of the firm.

Mr. Stanley Bennet, Joint Managing Director, and Mr. J. B. Clay (Director) also briefly addressed the guests.

Included in the group on the left, taken after the inspection of the works, are J. B. Clay (Director), A. Blackhall (Representative), Stanley Bennet (Joint Managing Director), O. P. Cronshaw (Rhyl), S. G. Deavin (Secretary, North Western Gas Board), H. E. Bennet (Joint Managing Director), A. K. Collinge (Preston), J. Bennet (Director), A. Henshall (Deputy Chairman, North Western Gas Board), and J. Wilson (Manchester). On the right is a general view of the new Northenden works.

Chemical Engineers' Examinations.—Particulars of the 28th Associate Membership examination of the Institution of Chemical Engineers are now obtainable from the Hon. Registrar of the Institution at 56, Victoria Street, London, S.W.1. Application forms must be returned by June 2.

The Oil and Colour Chemists' Association (London Section) is holding a Technical Trade Exhibition at the Borough Polytechnic, London, S.E.1, on April 7, 8 and 9 (2.30 to 8.30 p.m. each day) as a contribution to the vital spread of knowledge of the work of scientists and technicians. Suppliers to the paint, printing ink, and allied industries will present their latest work on materials, plant, and apparatus. The exhibition will be about 30% bigger than in 1951, when it was open for only two days, and an important condition of exhibiting is that responsible firms shall have scientific or technical men on the stands throughout the exhibition. There are 44 stands, all of which will show new things or tell a technical story about known materials.

'Yorkshire' Products

THE range of 'Yorkshire' products exhibited at the Building and Civil Engineering Exhibition in the Kelvin Hall, Glasgow (March 26 to April 12) by the Yorkshire Copper Works, Ltd., of Leeds and Barrhead, Scotland, includes many items of interest to the gas industry.

The Yorkshire Copper Works, Ltd., were pioneers in the introduction of copper for water, gas, waste and other services, and have devoted the resources of their metallurgical and engineering departments to the production of tubes and fittings of the highest quality. The 'Yorkshire' system of light gauge copper tubes and capillary fittings is simple to install, provides a craftsman's job, and is being increasingly specified for permanent and temporary housing and for all classes of work demanding the highest quality materials.

'Yorcalon' (long length) copper tubes are prominently displayed. The demand for these tubes for water pipelines to be buried underground, and for panel heating installations, is increasing day by day. They are particularly suitable for underground service pipes owing to their high resistance to normal soil and sub-soil corrosion—they conform to British Standard 1386 and are suitable for laying by orthodox methods or by mole plough. The latter method of laying these pipes refers particularly to outlying farms, estates and villages whereby pipelines can be pulled into the ground (at depths of up to 2 ft. 6 in.) by tractor-drawn mole plough in a fraction of the time required to lay pipelines by manual trenching.

A separate exhibit is devoted to the laying of 'Yorcalon' coils for panel heating installations, while a special display is made of Yorkshire high duty fittings for joining non-ferrous tubes. They are capillary fittings incorporating a silver-brazing alloy ring and are designed for pipelines operating at high pressure and/or high temperatures.

IN PARLIAMENT

Nationalised Industries (Membership of Trade Unions) Bill

ON March 19, Mr. IAN MIKARDO (Reading, South) moved that leave be given to introduce a Bill, entitled the Nationalised Industries (Membership of Trade Unions) Bill, to prohibit the payment of money by the boards of nationalised industries to certain organisations which prohibit their members from being members of Trade Unions.

Mr. MIKARDO said he hoped the objectives of the Bill would prove non-controversial since his action was supported by Members from both sides of the House. In the engineering industry there was an organisation called the Foremen and Staffs Mutual Benefit Society, which gave considerable sickness and other benefits to those employees of certain federated firms who were foremen, or of comparable grade, or above it. Their funds were financed partly by payments from the members and partly by a substantial subsidy from the employers. Any employee of appropriate rank could become a member of the organisation and receive its benefits on two provisos—one of which was that he would undertake not to become a member of a trade union. This, said Mr. Mikardo, was a sort of closed shop and was a piece of sheer discrimination against trade unionists.

It might be argued, he went on, that private employers could do what they liked with their own money, but everyone would find it repugnant that public bodies should subsidise an organisation out of public funds which discriminated against trade unionists in this way. The Bill aimed at preventing the boards of nationalised industries from financing or assisting to finance an anti-trade union body.

Without discussion, the Bill was ordered to be brought in and read the first time. It will come up for Second Reading on April 4.

Space Heating (Simon Report)

Mr. GERALD NABARRO (Kidderminster) asked the Minister of Fuel and Power on March 24 what steps he proposed to take to discourage continuous space heating by electricity and what steps were now being taken to implement the proposals in regard to domestic heating contained in the Simon Report, 1946.

Mr. GEOFFREY LLOYD stated that the Simon Report recommended that the main space heating load should be carried by solid fuel rather than electricity or gas, and they therefore proposed various measures for the production of improved solid fuel burning appliances and for encouraging their use. Numerous steps had been taken to implement these proposals. At present, a further review of the minimum standards of improved appliances was being undertaken in the light of recent research. Pressed to make a detailed statement deprecating the continued use of electricity for continuous space heating, as there appeared to be considerable misunderstanding on this important matter, the Minister said he would do so if a convenient opportunity arose, adding that Mr. Nabarro would recollect that while the Simon Report took the line he mentioned, it also said that gas and electricity should be used for intermittent space heating.

Mr. REGINALD SORENSEN (Leyton) asked the Minister what publicity he had given to the use of certain modern types of domestic stoves and grates with a view to fuel economy, and if he would consider the possibility of offering financial and other inducements for the substitution of such fixtures for uneconomical kinds.

Mr. LLOYD replied that the Coal Utilisation Council and the Women's Advisory Council on Solid Fuel were giving continuous publicity and instruction on these matters. No doubt largely as a result, the demand for appliances exceeded the supply, and special inducements were unnecessary at present.

At Question Time on the following day, Mr. NABARRO asked the Chancellor of the Exchequer whether he could state the cost to the Exchequer in a full year of accepting as an admissible charge within maintenance allowances for Schedule A income tax the cost, including installation, of approved solid fuel burning domestic appliances, based on the 1951 rate of purchase, for other than new houses, and excluding council houses.

On being advised by Mr. R. A. BUTLER that such information was not available, Mr. NABARRO asked the Chancellor to clarify the position in this regard, pointing out that a certain Inland Revenue officer would allow the installation of these fuel saving devices as a charge against Schedule A while others would not. Could the Treasury make it clear that there should be some uniformity over the whole country in the interests of coal conservation?

Mr. BUTLER observed that this raised a rather different question, which he would certainly investigate.

Capital Formation Expenditure

On the same day, Mr. NABARRO asked the Chancellor of the Exchequer whether he would state the estimated capital formation expenditure in 1952 for the nationalised industries; what measure of control was to be exercised over capital investment in such industries; and to what extent capital investment curtailment similar to that in the private sector of industry would apply to them.

Mr. BUTLER, in a written reply, said that in view of the uncertainties of the economic situation he did not propose to publish a detailed estimate of capital formation expenditure by individual industries in 1952. The Government had laid down ceilings for investment by the nationalised industries. In doing so they had regard to the basic character of those industries. It was quite possible that shortage of materials would prevent the totals from being fully attained. All substantial expenditure by nationalised industries on new buildings or works was licensed or authorised under Defence Regulation 56A.

Defamation Bill

In the course of the discussion in Standing Committee on the Defamation (Amendment) Bill, Mr. W. T. WELLS (Walsall) raised the matter of protection of statements and other documents issued by nationalised bodies. It seemed to him that the Bill would cover a Press hand-out by any Government department as well as by any board in any of the nationalised industries which he thought it was wholly undesirable to protect in this way.

Sir PATRICK SPENS (Kensington, South) agreed that nationalised bodies ought not to be given the protection for their Press hand-outs as if they came from a Government department. He thought the paragraph in the Bill as it stood went too far and he would like to see it narrowed to some extent.

The ATTORNEY GENERAL said he had some sympathy with what had been said, but he did not want to say anything unkind about public relations officers. It seemed to him somewhat dangerous that there should be no limitation on such organisations. He agreed that the words 'matter issued for the information of the public' would include anything issued by public relations officers of any of these organisations. He knew that it had been said that this had been hallowed by some previous decision or other, not under this Government, but he did not know what it was, and he would like to look into it.

Mr. J. E. MACCOLL (Widnes) quoted the case of a nationalised body issuing information of public concern and taking sides in an industrial dispute. It was not right, he said, that a nationalised body should be able to issue statements of that kind while the trade unions did not enjoy protection when issuing similar statements.

Monopolies Commission

On March 27, Sir WALDRON SMITHERS (Orpington) asked the President of the Board of Trade if he would take steps to amend the Monopolies and Restrictive Practices (Enquiry and Control) Act, 1948, to empower the Monopolies Commission to enquire into the nationalised industries.

Mr. PETER THORNEYCROFT, in a written reply, said he was considering this matter in preparing legislation to strengthen the Commission and widen the scope of their activities.

Answering a question, on March 22, Mr. THORNEYCROFT said that the Census of Production forms sent out this year would total about 275,000. Nearly 200,000 of these went to the smaller firms and asked for only very limited information. The number of answers required varied between firm and firm and between industry and industry.

CONSULTATIVE COUNCILS

North Thames Public Relations

DURING the past 12 months or so members of the North Thames Gas Consultative Council have had the opportunity of learning a great deal about the inner workings of the various departments of the Board from senior officers of the headquarters staff. At their meeting on March 27, held at the Westminster City Hall (Councillor EDWIN BAYLISS presiding), they heard from Mr. L. H. Hardern, Public Relations Officer, how his department would, in normal times, spend something like £100,000 a year on the many phases of public relations, advertising, publicity, exhibitions, displays, films, lectures, demonstrations, and information services.

Mr. Hardern explained that while they were not, of course, expending this sum during the present 'go slow' on advertising and publicity, they were, nevertheless, carrying on all the essential services necessary to keep gas before the public eye in the Board's area and were fully prepared to go into full operation again as soon as times were more normal.

They regarded public relations, he said, as *good* relations. This was not just a one-way traffic; it included a study of what the consumer wanted. There was a tendency for the public to regard a nationalised industry as a huge monopoly, and it was important to break down that impression and show that gas boards consisted of human beings with a sense of humour and a desire to help.

It was the practice in the North Thames Board for all the heads of departments to hold a short meeting each morning with the Chairman and Deputy-Chairman of the Board, as a result of which everyone knew what was going on and what was the current policy of the Board. They were thus able to keep the public informed and immediately counter any wrong impressions that might be formed concerning any of the Board's actions.

Watching the Press

Within the public relations department it was the responsibility of Miss Ellington Wright to ascertain what women were thinking, while it was Mr. Hardern's own responsibility to find out what public authorities were feeling about gas. One of the most important things was to watch what the Press were saying. They had a very live Press cuttings section covering 11 national dailies, three London evening papers, 10 Sunday papers, nine weekly papers, four weekly magazines, and 37 technical journals. The section made a special point of seeing that the cuttings reached the heads of the departments concerned. They were thus in a position to tackle any problem in its very early stage.

They also had an information section which dealt with special questions from an infinite variety of different people, including the Press, which was available day and night throughout the 24 hours. If any officer was not on duty, arrangements were made to put the enquiry through to his home by telephone. They provided, in addition, facilities for visiting works or taking photographs of plant, or supplying information about any special activities. This had a particularly beneficial effect upon staff morale.

The North Thames Board had about 80 showrooms, and they regarded it as most important that the windows should reflect the virility of the Board. They therefore did their best to keep the showroom windows bright and attractive with the latest information concerning the appliances available. It might be felt that the local manager should be solely responsible for what went into his showroom window. While they gave the local manager a great deal of initiative, they provided the principal displays from a central source, leaving the secondary displays to the local staff.

New Display Service

It had been their experience in the past that the centrally produced displays were liable to damage in transit, and they had decided as from this month to adopt a new system whereby a specialist firm (City Displays, Ltd.) would handle the distribution of the displays to the individual showrooms. In this way they hoped to keep their showroom window displays in a better condition than they had done in the past.

The display section was also responsible for exhibitions, both national and local, including collaboration in special local events such as horticultural shows, where they arranged demonstrations of cooking, fruit-bottling, etc. They also took part in local carnivals by entering a decorated lorry (which had won a number of prizes), but as an economy measure they were not continuing this particular contribution for the time being.

There was a large and growing demand from schools for visual aids such as models, charts, films, etc., and they made a special effort to supply all they could in this direction. The letters of appreciation which they received from head teachers were most encouraging.

Then there was the design and decoration of showrooms and offices, for which they had their own artists and architects. They also provided attractive wall panels to brighten the staff canteens.

A facilities section dealt with visits to works and to Watson House, and every year they had an enormous number of requests for visits of this kind which they never refused if they could possibly help it. This section also handled the distribution of films. They provided complete programmes for groups which could gather a sufficiently large audience—occupying about 1½ hours, and including two gas films and two films of general interest. During 1951 they gave 800 film shows to audiences totalling some 60,000 people and averaging about 75 persons per show. They aimed at a charge of 6d. per head for such shows. The section further dealt with film strips and lectures for schools and had done most valuable work in providing gas appliances for theatres and commercial film studios. As a result, kitchen scenes almost always included gas appliances.

The publications section produced leaflets for tenants of new council houses, leaflets on gas production for schools, on careers in the industry, showroom leaflets dealing with individual appliances, and booklets describing new plant and equipment. Last year 220,000 such leaflets were provided for public use, together with 15,000 cookery books.

The advertising section was the most expensive section—and perhaps the most contentious. The Government did not want them to undertake any advertising at the present time, but they looked forward to the time when they could take this up again. They were, however, to be given the same facilities as the coal industry for advertising fuel-saving solid fuel appliances and would be advertising gas-ignited coke grates as soon as such publicity was allowed.

Heat Loss from Geysers

In the course of other business at this meeting of the Consultative Council, a suggestion was considered from a District Committee for providing single-point bath water heaters with a length of flexible tubing from the outlet spout to a point nearer the surface of the bath water so as to lessen the heat loss caused by the passage of the hot water through the air. The problem of gas leakage from flexible metallic tubing to portable appliances was also mentioned; and it was decided to ask the Board to refer both these points to Watson House for consideration.

A request was also considered from a local authority for the Board to give earlier notice of increases in the charge for public lighting so that provision could be made in the council's annual estimates.

The following statement of gas sold by the Board during the December, 1951, quarter was circulated to members of the Council:

Berkshire and Buckinghamshire group: Domestic, 2,875,110 (=64.1%); non-domestic, 1,576,761 (=35.2%); public street lighting, 33,270 (=0.7%); total, 4,485,141.

Middlesex and Surrey group: Domestic, 15,833,580 (=63.2%); non-domestic, 8,538,075 (=34.1%); public street lighting, 663,475 (=2.7%); total, 25,035,130.

Metropolitan group: Domestic, 17,731,224 (=48.1%); non-domestic, 18,159,153 (=49.3%); public street

lighting, 946,872 (=2.6%); total, 36,837,249.

Essex group: Domestic, 13,287,261 (=68.7%); non-domestic, 5,753,222 (=29.8%); public street lighting, 287,468 (=1.5%); total, 19,327,951.

Total: Domestic, 49,727,175 (=58.0%); non-domestic, 34,027,211 (=39.7%); public street lighting, 1,931,085 (=2.3%); total, 85,685,471.

The figures have not been adjusted for gas burnt after meter readings.

Three Zone Rate 'Unfair'

THE North Eastern Gas Board's new three zone gas tariff affecting over 500,000 consumers was described as unfair and to be causing much concern at a meeting of the North Eastern Gas Consultative Council at Leeds on March 24. Alderman J. H. Whitaker, Todmorden, said the tariff was inequitable as between the three zones and the various consumers. The maximum and minimum prices should be much closer together, he said. It was wrong that a product costing 14d. should be sold to one consumer at 10d. (for street lighting), 11.25d. to some bulk consumers and 20.25d. in the case of some domestic consumers.

The Board had missed a unique opportunity of creating unity and equity by the operation of a one zone tariff because of differences over 'a paltry penny' per 1,000 ft. 'The one thing that has upset people in my area,' he went on, 'is this discrepancy between different towns. You cannot expect people in Todmorden to pay 12s. more than they did before, while in Halifax they are having a reduction of 4s.'

Commenting on the Board's annual report, Alderman H. Sutcliffe, Horsforth, said he was disturbed at the increase in staff during the year. The increase in the number of operatives of 149 (2%) was not unreasonable. But the increase of 238 (15%) in administrative, clerical and technical employees was alarming.

The Chairman of the Board, Dr. R. S. Edwards, said that the number of retort house workers had actually gone down, but other workers had increased substantially because the Board was now doing more work by direct labour than was done before. The Board had its own road maintenance group and painting gangs, which hitherto had been done by contractors.

'We are getting an improvement of our service by more direct control of our labour,' he said. The increase in administrative and technical staffs was accounted for by the fact that staffs formerly in the employ of local authorities did not come under the Board's control until April 1, 1950.

When Alderman Harry Hardy, Morley, asked whether the Coal Board was now in a position to guarantee the calorific value of coal supplied to gas plants as was the case before nationalisation, Dr. Edwards said where coal was not up to standard they took the matter up with the Coal Board.

District Committees and the Press

A POSITION of stalemate arose when the South Western Gas Consultative Council discussed at Taunton whether or not to admit the Press to local committee meetings. An amendment that admission of the Press should be left to the discretion of the local committee was defeated by 11 votes to 6, but when the substantive motion was put, members voted 9—6 against it.

After the voting Councillor A. W. Balmer (Stroud), tried to move a resolution that local committees should admit the Press and 'star' items they did not want published, but he was ruled out of order. Cheltenham local committee had submitted a resolution asking the Council to consider whether the time had now arrived when the Press should be invited to attend at local committee meetings.

Asking the Council to approve this resolution, Councillor Balmer said his committee felt that the experience of the Press would be of benefit to the public and to consumers. He received support from Weston-super-Mare's delegate, and from the Mayor of Bath, Councillor R. W. Pearson.

However, a Bristol delegate said that as 99% of the matters dealt with by his committee were private it would not be worth while for the Press to attend meetings. Another member commented: 'In my experience we can trust the Press. I have always found them most helpful.'

Councillor Mrs. E. J. Exelby, Chairman of the South Cornwall Committee, said that as a general report was given to the Press after its meetings, the committee did not think it necessary for the Press to be present.

Alderman E. D. Newcombe (Exeter) felt that admission of the Press should be left to local committees to decide, and he moved the amendment on those lines.

One delegate thought that members of local committees had a 'greater feeling of debate' when meetings were held in private. Another said: 'We have got nothing to hide. Let the Press into these local meetings instead of issuing hand-outs afterwards. There are too many hand-outs.'

Councillor Mrs. B. J. Shell (Melksham) said that if matters discussed at Consultative Council meetings could be published, surely reports of smaller meetings relating to local people should also be published. She felt the Press should be allowed to do their own reporting.

The Chairman, Councillor A. W. Loveys, said that points to be noted were that local committees discussed very personal complaints and that where their decisions had to be approved by the Consultative Council members might be prejudicing the matters if they were published before the Council meeting.

Councillor Pearson said that at Bath complaints were made direct to the local gas unit which seemed to deal with them so efficiently that the local committee did not get such trivial matters.

Councillor Newcombe said he would withdraw his amendment if local committees would 'star' items on the agenda which should be discussed privately. After further discussion, however, he agreed to let his amendment stand.

Taunton Local Committee

A complaint on behalf of the Ilminster Urban District Council regarding the quality of gas sent out from the local undertaking was raised at a meeting of the Taunton Local Committee on March 14, Councillor Loveys presiding.

Mr. T. W. Jackson, Sub-Divisional Manager, said his investigations showed that there was one isolated incident recently which could have given rise to the complaint. On January 31 there was an unexpected breakdown of the refractory of a retort and this led to a greater quantity than usual of a diluent gas being incorporated in the composite gas that was sent out. The effect was to reduce the calorific value. The fault was rectified quickly, and gas of the normal quality was provided within 18-24 hours.

It was reported that a complaint from a Bridgwater resident that the cost of gas to her was excessive had been investigated. It was found that the consumer had not made sufficient allowance for the effect of the rebate on the net cost to her and that, in fact, the charge was two-thirds of what she thought it was. She was satisfied that the record of consumption figures and charges, which was produced to her, was correct and reasonable.

Mr. G. Sherlock, Accountant of the Southern Division of the Gas Board, explained to the Committee the modifications in the present tariff structure and prices that the Gas Board was now considering in conjunction with the Consultative Council. From January 1 costs, over which the Gas Board had no control, had increased by over £1 mill. per annum and amendments in gas prices might become operative from June 1, 1952. At each of the 11 local committees the price areas in relation to various parishes within the respective sub-divisions were being discussed.

The Committee made recommendations regarding local price areas which will be further discussed by the Consultative Council and the Gas Board.

The Association of Municipal Corporations, which represents 422 boroughs has decided to ask the Government to introduce legislation to set up a tribunal to hear appeals on gas and electricity prices and to approve all maximum tariffs.

Sulphuric Acid Price.—The Minister of Materials made an order which took effect on April 1 reducing the maximum prices of sulphuric acid by about 7%, due mainly to decreases in freight rates. The reductions are 5s. 10d. per ton of weak acid and 8s. 6d. per ton of strong acid. Maximum prices of ground sulphur are also to be reduced, the average reduction being £1 14s. per ton.

PUBLICATIONS RECEIVED

'A Biographical Survey of Flow through Orifices and Parallel-Throated Nozzles,' by T. H. Redding, M.SC., A.M.I.MECH.E., A.F.R.AE.S., has been published as Research Publication M.9 of the British Scientific Instrument Research Association (Chapman and Hall, 32s. 6d.). The author, who is a senior member of the research staff of B.S.I.R.A., has been engaged for many years on investigations into problems relating to the measurement of fluid flow. All aspects of flow through orifices and parallel-throated nozzles have been reviewed, but the work has been written with particular reference to the use of these devices for measuring rate of fluid flow. The bibliography covers the literature of the subject from the year 1832.

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The Research and Technical Committee of the Institute of Cost and Works Accountants issues from time to time, with the consent of the Council of the Institute, publications based on the views of members of the Institute arising from discussions at meetings throughout the country. *The Accountancy of Changing Price Levels* is the fifth publication issued by the Committee. It is a collation of a study of the problem made by members of the various branches of the Institute and was discussed at the twenty-second National Cost Conference held in London in May, 1951. In its present form it incorporates amendments made in the light of discussion at that conference and those made after subsequent consideration. The report is not, therefore, an official expression of the views of the Council of the Institute. Because the importance of this subject to high executives in industry is likely to continue for some time, an abridged version of the main text book has been specially produced for their benefit. Both publications are available from Gee & Co. (Publishers), Ltd., 27-28, Basinghall Street, London, E.C.2. Price: 15s. post free for the main work; 2s. 6d., post free, for the abridged version.

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Instrument Engineer is a new publication by George Kent, Ltd., of Luton, which will appear twice yearly, and is aimed to serve that body of people indicated in the title of the journal. The instrument engineer is a comparative newcomer to industry, and it may be some time before his status and the qualifications which he requires are clearly defined. Consequently, in a journal of this kind a wide range of interests has to be met. It will be one of the objects to encourage the proper recognition of the instrument engineer and to establish his status. Particularly will the journal advocate the provision of proper educational facilities with adequate courses of studies and recognised awards. Following a foreword by Philip W. Kent and an editorial note, the first issue (April, 1952) contains a lengthy and highly technical article on 'Oxygen Analysis;' another on 'Special-Purpose Applications of On-Off Control (Heat Treatment Furnaces);' and the 'Application of Automatic Control to a Gas Producer.' Finally, is the first of a series of articles under the main heading of 'The History of Flow Measurement by Differential Pressure'—the work of Venturi. A publication devoted to measurement and control in industry should find a wide circle of readers, and we wish our new contemporary all the success which is deserved by those courageous enough to launch new vessels on to the stormy waters of technical journalism.

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Two statistical booklets have recently been published by the Institute of Municipal Treasurers and Accountants in collaboration with the Society of County Treasurers. Each of these booklets is the second in its series, the first having been published in respect of the year 1949-50. *Children Services Statistics, 1950-51,* relate to the children services provided by each county and county borough in England and Wales under the Children Act, 1948, and the Children and Young Persons Act, 1933. A summary table gives totals and averages for all authorities, showing total children in care of all authorities at November 30, 1950, 58,998; net rate borne expenditure, total £6,504,412; average per 1,000 population served £148 14s.; average rate equivalent, 4.86d.

Welfare Services Statistics, 1950-51, relates to the various welfare services administered by each county and county borough in England and Wales under the provisions of the National Assistance Acts, 1948 and 1951. A summary table shows: Net rate borne expenditure, total £9,593,871; average per 1,000 population, £219 6s.; rate equivalent, 7.17d.

Judge Criticises Gas Board

CAUSTIC comments were made by Judge Ralph Shove at Boston County Court on March 20 on a claim by the East Midlands Gas Board. Margaret Fanny Kirkham, of Boston, was sued by the Board for the return of goods on hire purchase. When Mr. J. W. Murray stepped into the witness box and said he represented the Board, Judge Shove remarked: 'That does not tell me anything at all. You may be the office cleaner or the Chairman of the Board. Now who are you?'

Mr. Murray said he was a rentals clerk in the Board's offices at Boston.

The Judge commented that the Board was not properly represented and added: 'Do you consider that a clerk in the Boston office is a worthy representative of the East Midlands Gas Board to appear before a judge in court and, if necessary, argue the case on behalf of the East Midlands Gas Board?'

Mr. Murray: My instructions were that if there was any doubt I was to ask for an adjournment.

Judge Shove: That is a different matter. Don't take anything I have said personal to yourself. You have to obey instructions. I don't blame you.

Mr. Murray said the amount due was £1 14s. 6d. When he said he did not see the notice to Kirkham to determine the agreement posted, nor could he swear that the notice was sent, the Judge said: 'Then you cannot prove your case. I cannot make orders against people unless the case is proved.'

Asked what type of proof would be wanted, Judge Shove replied: 'I am not here to advise the East Midlands Gas Board what evidence they should call. Gracious me! If an impecunious person comes here not educated, knowing little about the world, then I can assist, but I am not going to give the East Midlands Gas Board advice how it can prove its case. I will adjourn the case in order that the notice can be proved. You can go back to the office and tell your chief that he must prove his case that the notice was sent before I can make an order. He will know, or he can find out, how the notice can be proved.'

'Fantastic New Tariff'

A PROTEST in the strongest possible terms against the 'fantastic new gas tariff' recently announced for Lichfield is to be made by the City Council.

The Council decided that the protest would be a triple one—to the West Midlands Gas Board, to the local M.P. (Mr. Julian Snow), and to other local authorities who also have to pay on the highest scale—2s. a therm for the first 45 therms.

Leading the attack, Alderman A. L. Garratt, said that Birmingham had to pay only 1s. 4½d. and Stoke-on-Trent 1s. 6¾d. a therm. Lichfield was nearer to the North Staffordshire coalfield; therefore, he said, transport charges for coal could not possibly be any explanation for these 'amazing variations in prices.' The same stream of nightmare calculations ran through the commercial and industrial tariffs, he added.

An official of the West Midlands Gas Board said later: 'We shall carefully consider any representations made to us. But the cost of production in towns with large gasworks is lower than in other towns and offsets any extra transport cost of coal.'

Scottish Decentralisation

IT was reported in the *Aberdeen Press* on March 5 that the Government intends to press forward with a big policy of decentralisation for Scotland. Mr. James Stuart, Secretary for Scotland, gave the news at a meeting with Scots Unionist M.P.s.

It is intended to set up separate boards for coal, electricity, and railways. They will act in concert with, but in no way subordinate to, the English boards. A Scottish Gas Commission will be set up responsible to the Secretary for Scotland to return wherever practicable and desired, the nationalised gas undertakings to local authorities.

Mr. Stuart also intimated that after the Catto Committee on Anglo-Scottish finance had reported, a Royal Commission would be set up to review the whole situation between Scotland and England.

AMERICAN SPOTLIGHT

Items of Topical Interest from the Contemporary Technical Press of Canada and the United States

GAS-HEATED BRANDING IRON

THE legendary branding iron has gone ultra modern in the new Western Hills Motel, Fort Worth, Tex. It is now a gas-heated apparatus for branding steaks, but not on the hoof.

The Branding Room of this totally gas equipped hotel preserves a lot of the atmosphere of the old West. A feature of this room is an arrangement whereby guests select their steaks and then brand them with the letter R for rare, M for medium, MR for medium rare, and so on. The designers of the distinctive room were confronted with a problem in how to keep the irons white hot without having a smoky fire and much inconvenience. They just couldn't carry old-time atmosphere so far as to maintain a cow-lot fire.

Then up came a salesman of the Lone Star Gas Company, who suggested that gas burners covered with coal-like nuggets would look just as real as a ranch branding fire. And that's how it was done. A gas line concealed in the branding stand fuels two small burners. Over the burners are spread nuggets of fireclay which glow like the real thing. The branding irons resting on the nuggets are kept hot but clean, and the guests have a great time branding their steaks. (*Gas Age*).

* * *

MODERNISED CUSTOMER SERVICE

A CUSTOMER service centre designed to give instant and personalised service to any of the 140,000 consumers of the Houston division of the United Gas Corporation has taken the place of the former counter-and-window type of transaction, which was a source of delay in handling enquiries.

Under the new system there are 16 neat, well-furnished reception desks, each manned by a specially trained customer contact clerk, available to handle the complete details of any request for service or information. Only the routine payment of regular bills is now handled through three cashiers' windows maintained for that purpose. On each of the reception desks a Dictograph enables the clerk to speak with any department of the company and obtain whatever information may be required on a moment's notice.

The delicate and sometimes embarrassing matter of a customer's credit record is handled by means of a special device, which eliminates discussion of the details within the hearing of an applicant for new or change of address service. As the routine forms are being filled out, the name and former address of the customer are phoned to the case history department. If his credit is good, a green flag appears on the interviewing clerk's desk unit and the transaction is completed with no necessity for any further questions. If the applicant's record is bad, a red flag appears and he is then referred to the credit department.

The office is equipped with comfortable chairs for those who may have to wait briefly during rush hours, and a receptionist is on duty to see that they are waited on in proper turn, and that they receive prompt and courteous attention. (*American Gas Journal*).

* * *

RESEARCH TRENDS

TRENDS of gas appliance research were outlined in the January issue of *A.G.A. Monthly*. For example, work is continuing on gas pilots of very low input rating for application to domestic appliances. Efforts are being made to develop a practical pilot which will burn less than 50 B.Th.U. per hour. Extensive studies on the application of automatic ignition systems to commercial cooking equipment are also nearing completion.

For many years the A.G.A. Laboratories have devoted considerable effort to the investigation of the fundamentals of burner design, and recent exploration of the mechanics of combustion cover non-primary aerated blue flame burners and burner flexibility on base and peak load gases.

One of the major factors in the performance of any gas appliance is its venting system, of which an intensive study is now in progress, and a comprehensive analysis and correlation of all available literature and other information on various phases of venting is nearly completed. A small instrumented test room has been constructed and equipped with various domestic gas appliances. Air is supplied to the room in controlled quantities and the performance of the appliances noted under several ducts, louvres, and grills to satisfy combustion and ventilation air requirements.

* * *

SINCEREST FORM OF FLATTERY

THE *Gas Age* is enthusiastic about the Gas Council's 'I never Smoke When I'm Working' advertisement and recommends readers to steal the theme and copy for use in America. 'We don't know the legal or ethical liabilities of such theft,' observes the Editor, 'but let's just rush ahead anyway.'

Another aspect of this advertisement which *Gas Age* likes is the complete lack of apologies for British industrial gas use. The day has come, it is stated, when competition from electricity and oil on a firm basis forces re-valuation of interruptible industrial use. This old industry must put itself in a position to offer constant quality and constant quantities of gas to all users at all times.

NEW CONVERSION UNIT

A GAS conversion unit which operates without discernible flame has been marketed by Burdett Manufacturing Co., of Chicago. In this unit the gas-air mixture is blasted against a high temperature refractory (2,300°F.), which is specially designed to keep the fuel mixture in contact with the burner surface.

The makers claim that the gas-air mixture cannot pass the combustion zone without reaching combustion temperature, and for this reason maximum combustion and economy of operation are attained. The unit, it is said, will convert any gravity feed or forced air furnace, or any steam or hot water boiler of 100,000 to 200,000 B.Th.U. requirements for operation on any type of heating gas at savings up to 21% in fuel cost. (*Gas Age*.)

* * *

SULPHUR FROM NATURAL GAS

THE Shell Oil Company of Canada has started producing sulphur as a by-product of natural gas at the Jumping Pound gas plant in Alberta, the first time it has been produced in Canada in this way.

The company uses a relatively new process of sulphur recovery from hydrogen sulphide and is expected to produce about 9,000 tons of elemental sulphur annually by this method. Output will increase as the market for natural gas expands.

* * *

TOP CHEFS PREFER GAS

THE results of a nationwide survey by the Gas Appliance Manufacturers' Association prove conclusively that gas is the 'number one' fuel with America's top chefs.

The poll reached into the spick and span kitchens of foremost chefs in New York, Los Angeles, Chicago and Washington, D.C. Overwhelmingly, the chefs stated that gas—natural, manufactured or LP—gave top performance and the best results. Only one remained off the band-wagon since he had no particular preference for any special type fuel. But even he admitted he used gas—and gas alone—for cooking.

The object of the survey was to settle once and for all the question: 'What fuel gets the best cooking results?' Eleven basic questions were asked all the chefs. They tended to make the chefs talk freely. In most cases, answers were so comprehensive they revealed the full extent to which the chefs rely on gas as a cooking fuel. Only one question—'what kind of fuel do you prefer to cook with?'—got a one-word answer. The answer invariably was 'gas.' (*A.G.A. Monthly*).

YORKSHIRE JUNIORS VISIT DRAKES, LTD.

MEMBERS of the Yorkshire Junior Gas Association visited Halifax on March 19, President's Day, when they were the guests of the well-known Yorkshire firm of constructional gas engineers, Drakes, Ltd. On arrival at the Ovenden works, the visitors were welcomed by Mr. John Drake, Chairman and Managing Director; Mr. Francis D. Drake, Director and Joint General Manager; Mr. F. Raistrick, Joint General Manager, and other members of the staff. Each visitor was presented with a brochure giving particulars of the activities, products, and achievements of Drakes, Ltd., over the past 100 years.

The firm was founded in 1847 by Mr. Jonas Drake, who during the first 30 years, had to battle alone with the usual difficulties and obstacles associated with the cultivation of a new project. But in 1877 his son, Mr. J. Armitage Drake, who had been working on parallel lines, joined him in partnership, and the firm specialised for a period in the building of metallurgical furnaces and the setting of retorts. Mr. Jonas Drake and his son became pioneers in gas firing, and the installation of regenerator furnaces, working to the specification of Liegel, Siemens, Livesey, Frith, and others; until in 1896 Mr. J. Armitage Drake patented and introduced the tubular regenerator furnace which proved such a great success. From that period the growth of the firm was phenomenal. Subsequently they undertook contracts for carbonising plant all over the world.

The firm remained so constituted until Mr. William A. Drake, the eldest son of Mr. J. Armitage Drake, joined it. Thus, W. A. Drake represented the third generation, and in 1902 a company was formed with a capital of £90,000, to be known as Drakes, Ltd., with Mr. J. A. Drake, Chairman, and Mr. W. A. Drake and Mr. J. S. Marsland, Managing Directors.

Briefly then, the firm has been established for over a century, constituted as follows: Jonas Drake, 1847-77, Jonas Drake and Son 1877-1902, and Drakes, Ltd., from 1902 onwards. Unlike many trading concerns, Drakes, Ltd., has, from its earliest days, had a family tradition—the sort of tradition that jealously guards those old-fashioned virtues of diligence, thoroughness, and good craftsmanship.

After luncheon, which was served in the works canteen, Mr. H. Dearnley, President of the Yorkshire Junior Association, in referring to the Chairman of the Directors, Mr. John Drake, said that for many many years the name of Drakes of Halifax had been a household word in the gas industry, both in this country and abroad. He had vivid recollections on a number of occasions of the late Mr. R. N. Webb amplifying at great length on how he and Drakes built the inclined retort setting at New Wortley gasworks in the early 1900's and made it the finest inclined setting in the British Isles.

Referring to the fact that a number of the firm's staff had recently joined the North Eastern Gas Board, Mr. Dearnley said that he had been informed by those in a position to judge that the acquisition reflected credit on the training they received while employees of Drakes, Ltd.

Mr. John Drake, replying, thanked Mr. Dearnley for the kind things he had said about the firm and his forbears. The Directors and staff appreciated the honour of having them visit their works on President's Day, and he hoped the visit would be of interest to all.

Apologies for absence were made on behalf of Mr. G. E. Currier, O.B.E., Deputy Chairman, North Eastern Gas Board, and Mr. A. McDonald, Board Member, and for Mr. Newham, Mr. Anderson, and Mr. White.

Mr. Dearnley, before giving his Presidential Address, expressed appreciation at the support the members had given him on his President's Day. He was delighted to have the support in person of the Chairman of the North Eastern Gas Board, Dr. Edwards. The psychological effect of this support on a President had to be experienced to be properly appreciated. The interest shown in the Association by the Chairman, said Mr. Dearnley, had given him much encouragement. He also thanked Mr. Appleyard, his Group General Manager, for his instantaneous and willing co-operation in the requests he had made relative to his Presidential year. Mr. Dearnley also welcomed Dr. Blackburn, Research Chemist to the Joint Research Committee of the Gas Board and the University of Leeds; Mr. L. G. Townsend, President of the Manchester Junior Association, and the Hon. Secretary of the Manchester Juniors, Mr. T. W. Pickthall. He also extended a welcome to Mr. Firth and to Mr. F. H. King, Deputy Group General Manager.

After lunch on the occasion of the President's Day visit of the Yorkshire Junior Gas Association to the Halifax works of Drakes, Ltd. Seated in the front row (left to right) are I. Marshall, B. Browne, F. King, D. C. Henderson, J. Hargreaves, T. W. Pickthall, L. G. Townsend, J. A. Drake (Chairman, Drakes, Ltd.), H. Dearnley (President, Yorkshire Juniors), Dr. R. S. Edwards (Chairman, North Eastern Gas Board), S. Davies, C. G. Broome, N. G. Appleyard, J. Edgar, A. J. Winter, J. E. Brandon and F. D. Drake.

Dr. R. S. Edwards, Chairman of the North Eastern Gas Board, outlined the progress made by the Board since vesting day. At that time, said Dr. Edwards, they had 26 works in the area with Drakes plant, and this showed to what extent they relied on Drakes, Ltd. They were also calling on the firm to help them out at Selby, and with a larger plant at Keighley. The family firm of Drakes was closely allied with the North Eastern Gas Board, and he hoped it would be so for a long time to come. Dr. Edwards wished success to the Yorkshire Juniors on behalf of his two colleagues on the Board, Mr. G. E. Currier, Deputy Chairman, and Mr. A. McDonald, who were unable to be with them.

A vote of thanks was proposed by Mr. N. G. Appleyard, Group General Manager, Leeds, to Mr. Dearnley for his Presidential Address. Mr. Brandon, East Midlands Gas Board, moved a vote of thanks to Drakes, Ltd., and Mr. L. G. Townsend, President of the Manchester Junior Association, seconded.

Mr. John Drake, replying, said it was always a pleasure to help the Juniors in any way, and he would be pleased to pass on the thanks of the Association to their workpeople.

After lunch the members spent an interesting afternoon going round the works and were later entertained at tea.

Modern Distillation of Wood

By ASHTON.

Abstract of a paper by Dr. E. Charles, *Chimie et Industrie*, January, 1952

IN the last ten years or so important progress has been made in the carbonisation of hard woods. New processes have been developed which have reduced costs thanks to economy in fuel consumption and labour costs and thanks also to the increased production of chemical products.

Before entering into the detail of these processes a short summary is given of the basic principles involved. The elementary composition of dry wood varies little with the species. There is on the average 48.5% to 50.5% carbon, 6% to 7% hydrogen, 43% to 45% oxygen.

The principal constituents are cellulose, lignin, and semi-cellulose. Cellulose content varies between 30% and 63% with an average of 45%. Cellulose is formed in a molecular chain of glucose with the elimination of one molecule of water for two molecules of glucose. On carbonisation, cellulose gives not methanol but 1% to 4% acetic acid and tars containing only traces of phenol.

Lignin represents the 'skin' of the wood which contains 20% to 30% of it with an average of 25%. Its composition is not well known; it is not certain that the products isolated correspond to the lignin contained in the wood. It is known that lignin includes the function ether-methylic oxide. An average of 17.5% methoxyl is found in the lignin of soft (coniferous) woods and 21.5% in that of hard woods. Lignin includes the benzenic cycle to the exclusion of all other aromatic cycles and it does not contain the acetyl or formyl radicals. On carbonisation it yields, besides carbon, tar, a little acid, and methanol.

The semi-celluloses, 20% to 30% in the wood, serve to agglomerate the vegetable fibres. They includes gums and polysaccharides which give rise by hydrolysis to sugars. The hexosan content of wood is of the order of 13% for resinous woods and 3% to 6% for the angiosperms. Hard woods on the contrary are richer in pentosans. The semi-celluloses on carbonisation give products high in carbon, tar, and traces of acid. Wood with the sap in circulation may contain 40% to 50% of water. Stocked in air this will diminish in two years after cutting to around 20%. Ash content varies with the species and with the nature of the soil. There is more ash in the bark and the small branches than in the trunk. Hard woods of our region show on the average 0.7% to 1% ash; pines of the Landes contain only 0.3% to 0.4%.

Carbonisation Yields

If wood is heated in a closed vessel and the vapours are condensed, several distinct phases are observed. Below 170°C. practically pure hygroscopic water is released. From 200° a partial decomposition takes place with a pyroligneous product containing acid but not alcohol. Towards 250°-270° an exothermic reaction begins and continues without increment of heat from outside to 325°-350°. Heating is resumed to drive off the volatile content.

This heat produced by the decomposition of wood is an important phenomenon of which advantage is taken in the modern retort. In practice it can be assumed that there is a release of 250 calories per kg. of dry wood.

The pyrolysis of wood gives results very different from that of its isolated constituents, the yields of chemical products being much higher. All woods do not give the same yields. For example, laboratory results in a retort progressively heated to 500° in eight hours are tabulated. Yields of acid by weight were highest 8.6% from hornbeam, falling in the order, birch, beech, oak, elder, willow, poplar, Norwegian pine, larch, to 2.6% from forest pine. Yields of methylene varied in a slightly different order from 3.5 litres for beech to 1.7 for forest pine. Thus hard woods give high acid yields, 6% to 8.6%, soft woods less than 4%. Conifers also yielded a less quantity of methylene, but the difference was less marked than for acid. Yields of alcohol are inferior to 50% of the methoxyl groups contained in the lignin. Carbon yields are variable. Tar varies between 10% and 15%.

In the majority of the works carbonising hard wood supplies are obtained from the cutting of the undergrowth of forests with a cycle of 25 years on the average. The predominant species in order of importance are hornbeam, beech, oak. There are in France five works treating hard woods; the two most important, dealing with 85% of the wood so treated, are situated at Clamecy and Prémery in the department of la Nièvre (on the Loire in mid-France). The pyrolysis of resinous woods aims especially at the production of a special, valuable tar; this timber is particularly treated in works situated in the Landes.

For carbonisation the wood is generally dried. The logs about a metre long are loaded on wagons which are run into tunnels, constructed in brick or concrete, heated either by independent fires or by waste gases at a temperature between 150°C. and 200°C. After 18 to 24 hours heating the wood is withdrawn containing 5% to 15% of water.

Types of Plant

The ancient method of carbonisation in the forest by burning is briefly referred to. It is still used, in improved apparatus, but to obtain one ton of charcoal six tons of wood must be used. All attempts at recuperative treatment *in situ* have failed.

In the works retorts of the two types, for external and for internal heating, are in use. The first was, until recently, almost exclusively used for hard woods. The principal types of furnace or retort now adopted in practice are briefly described.

External Heating.—The retorts on this principle which are most widely used occur in three types. The movable, vertical, iron retort containing from 3 to 6 cu.m. is arranged in a brick furnace. Heating is by a portion of the gases evolved and by hot gases obtained by the combustion of tar or oil, or by producer. When carbonisation is complete the retort is withdrawn from the furnace and left to cool in the open air. There is also the fixed, horizontal, sheet-iron retort into which small wagons containing the wood are run. After carbonisation the charcoal is placed rapidly in a quenching vessel. And finally there is the tunnel retort containing one or several wagons. Heating is effected by tubes placed between the rails or on the sides of the wagons. Gas is burned in each of the tubes. The Grondal apparatus consists of several chambers of this type permitting semi-continuous working.

The Stafford Self-heating Retort makes use of the exothermic heat. It was put into operation in the Ford works in 1917 and carbonises 400 tons per day of scrap wood which is first dried for three hours in a rotating furnace 30 m. in length by 3 m. dia., which the wood leaves at a temperature of 150° with a moisture content of 0.5%. It proceeds to a vertical Badger-Stafford retort 12 m. high by 3 m. dia., well insulated and which has been raised to the temperature of 400°-500° at discharge. The charge reaches the temperature of 515° without heat supply. The charcoal is extracted periodically through a cone valve.

Retorts Heated Internally or by Injection of Hot Gases.—It would be difficult to obtain so low a moisture content with logs. It is therefore necessary to provide additional heat to drive off the moisture. The injection of hot gases presents several advantages: the thermal efficiency is increased and thanks to the progressive distillation and dilution of the gases the chemical products suffer the minimum of decomposition.

The method is very old. Without recovering by-products, Lagard and Dentelle in 1838 used blast-furnace gases in 20 retorts. Tissier used exhaust gases from internal combustion engines in 1914-18.

Modern Horizontal Retorts.—Carbonisation by injection of gas with recovery of by-products was practised in Sweden in 1907 by Aminoff who used a tunnel-oven in brickwork divided into several chambers. After de-tarring, a portion of the vapours and of the gases was reheated and re-injected on to the new charge. The process had a poor thermal efficiency. In a modification in 1918 by Bergström the gases and vapours

which emerged at a temperature a little over 100° towards the charging door are cooled. A portion of the incondensible gases is reheated to about 400° and returned to the carbonising zone. The charcoal was cooled by cold gases in the last chamber.

The Roma retort, on the same principle as Bergström's is the prototype of the modern vertical retort for the carbonisation of wood. It was applied in 1935 to the carbonisation of olive bark and also asphalts. According to Ch. Berthelot this retort, in sheet iron 12 mm. thick, has a mean diameter of 2 m. and a height of 12 m. The pyrolignin which is given off at the top is condensed in tubes. Heating is effected by injection, at about the middle of the retort, of the incondensible gases reheated to 425°-450°. A fraction of the cold gas is injected at the base to cool the charcoal. Several developments of semi-continuous retorts on these lines are briefly described.

An example of another type of retort is that of Pieters-Techno-Chimie, improved and installed at Clamecy. It is a square brick built oven, 3.2 m. in the side, erected with a charging stage 20 m. above ground level, with a capacity of 130 tonnes of wood. The wood cut and dried (or not) is introduced automatically at the top. Heating is by neutral gases, products of combustion of the gas of distillation. Cooling is by injection of cold gases completed by circulation of air in an external jacket.

The vertical retort with internal heating has the advantage over the horizontal retort that the surface subject to losses by radiation is much less for the same output. In comparison with externally heated retorts, the modern systems have realised an important reduction in fuel consumption and labour cost and considerable increase in yield of chemical products. A charcoal is obtained with volatile content regulated simply by the temperature of the injected gases.

Two minor disadvantages of the continuous retort are: (1) that most of the gas in circuit requires particular treatment and (2) that the charcoal is obtained in smaller pieces, owing to the rapidity of carbonisation which causes the pieces to burst, and there is a growth in bulk of the charge. The retort must have a height which is the greater as the logs are longer and of greater diameter. In practice the length of the logs must not exceed 1 m. The humidity of the wood must be low. In a retort normally insulated it is useless to heat the mass when moisture reaches 5% to 6%, but with a wood of 8% to 10% moisture heating can be controlled with the consumption of a small proportion of the gases given off.

Practical Results

One tonne of dried wood yields 400,000 calories in gases evolved, of which 40,000 are required for heating, with an excess of 310,000 calories in the gases. Heat released by exothermic reactions represents 250,000 calories or 86% of the heat necessary for carbonisation. There is thus available 310,000 calories in incondensible gases equivalent to 45 kg. of coal. For retorts with external heating a further quantity of 45 kg. of coal is consumed. Internal heating therefore realises an economy of 90 kg. of coal per tonne of dried wood carbonised.

Average yields obtained per tonne of dried wood are: charcoal, 330 kg.; fatty acids, 70 kg.; methylene, 20 kg.; tar and tarry oils, 150 kg.; gas, 220 kg. at 7,800 cal. per kg.; water, 210 kg.

The charcoal is obtained cool at the base of the retort with a volatile content of 8% to 10% which can be reduced by raising the temperature of the injection gases.

The large volume of gas circulated, 500 cu.m. per tonne of dried wood, requires condensers of large volume and washing columns of great diameter. It follows that continuous retorts require a great weight of expensive metal, copper or stainless steel. Maintenance consists in periodic cleaning of condensers and washers. Corrosion is small. Retorts run without stopping for several months or even years.

Continuous retorts, which require dried woods and which give high yields in chemical products, produce a concentrated pyroligneous mixture of approximately the composition: total fatty acids 14%, methylene 4%, tar 25%, water 57%. The proportions of the fatty acids is about: acetic acid 88%, formic acid 6%, propionic acid 3%, higher homologues 3%. The methylene is a mixture of methyl-alcohol, acetone, methyl acetate, and light wood oil.

Neutralisation of the pyroligneous mixture by lime or by soda is practically abandoned. Today solvents are used in various forms to extract directly the different acids. The processes, beginning with de-alcoholisation, are briefly described, with a summary of the products marketed.

The author claims to have shown the continued progress made in this modest, often misunderstood, industry of the carbonisation of wood. To compete with synthetic products it has had to develop a technique modernised on the lines of the larger chemical industry.

THE CONSUMER AND THE GAS INDUSTRY

THE following written contribution to the discussion on Professor D. M. Newitt's paper to the London and Southern Section of the Institution of Gas Engineers (see *Journal* for March 5) was submitted by Lieut.-Colonel J. A. Gould, M.C. (Distribution Engineer, South Eastern Gas Board).

Lieut.-Colonel Gould said his thoughts went to the paper entitled 'Britain's Energy—A New Conception' which Sir Claude Gibb read to the Institution of Mechanical Engineers, N.E. Branch, in January, 1949, in which he stressed the importance of a national fuel policy. He read a similar paper entitled 'Britain's Fuel Policy' to the Yorkshire Section of the Institute of Fuel in February, 1951. In urging the need for such a policy he emphasised the point that electrical power stations were being built which would not commence to work for a year or two and yet would have a useful life of some 25 years and that, therefore, fuel policy was being laid down for the next 30 years. Among many other things, he pointed out that a 1 kW domestic electric radiator costing £1 or so to purchase cost the nation £100 to supply if it was used during a peak load period, the £100 being in respect of the costs of a large central power station and the transmission and distribution costs.

Lieut-Colonel Gould went on to remark that it made him sad when Professor Newitt stated that the gas industry's overloads were met (he thought 'avoided' would be a more suitable expression) by reductions of pressure. This course, which he had never heard of before the last war, was surely not regarded other than as a very temporary measure. It was first used to provide for reduced gas supplies resulting from damage caused by enemy bombing, but had unfortunately been used to meet other contingencies. The thought of its being regarded as normal usage would make the departed gas engineers with whom he trained and served turn in their graves.

On distribution methods, those the author spoke of, such as the use of high pressure transmission and feeder mains and high pressure holders, were well known to gas engineers here, and their application had undoubtedly been considerably extended since the nationalisation of the industry as the result of examinations of their integration policies by area boards. In regard to the arrangements in a kitchen and the suggested use of a combined gas cooking and water heating appliance, such an appliance would have to serve the purpose of warming the kitchen, particularly as this was now so commonly used as a dining room or even sitting room.

Professor Newitt criticised the ovens of modern cookers as being, in general, inaccessible, and it would be interesting if he could elaborate on that point. The South Metropolitan Gas Company, under the inspiration of the late Dr. Carpenter, introduced many years ago what it called the table top oven where the oven was arranged alongside the hotplate and arranged well off the ground to eliminate stooping. It was found, however, that the additional cost of this, plus the fact that most kitchens were provided with recesses of insufficient size to accommodate the appliance, prevented it from becoming popular. Dr. Carpenter later had a cooker prepared in which the oven was arranged vertically over the hot plate. This was known as 'the oven on top.' The hotplate was only about 2 ft. from the ground and the intention was that the housewife could sit down by her cooker to stir her saucepans, etc. This did not take on, again for the reason of cost, and because short women found they could not lift dishes into or out of the oven without difficulty. He understood that the conclusion arrived at was that, apart from considerations of cost, etc., the ordinary standard cooker, as generally made, was preferred by the majority of housewives. He believed cookers of the table top type still were made by some manufacturers.

UNACCOUNTED-FOR GAS

The Report of the Sub-Committee on Unaccounted-for Gas which was presented without discussion at the 1951 Autumn Research Meeting of the Institution of Gas Engineers was discussed at a meeting of the Eastern Section of the Institution at the Town Hall, Peterborough, on February 28. The Eastern was the third of the District Sections to devote a meeting to consideration of the Report. It had previously been discussed at a joint meeting of the North of England Section and the Northern Junior Gas Association (*Journal*, January 2, p. 56) and by the Midland Section (*Journal*, February 27, p. 529)

MR. T. C. BATTERSBY (Watford) presided at the Peterborough meeting and the Report was introduced by Lieut.-Colonel J. A. Gould, M.C., Distributing Engineer of the South Eastern Gas Board, a member of the Sub-Committee.

Lieut.-Colonel Gould drew attention to the fact that in the section dealing with temperature of gas at consumers' meters the report prescribed the use of a Stevenson screen, installed in the open, to contain the thermometer used for determining the air temperature. Mentioning methods of correcting the calculation of gas sold to allow for continuous meter reading he emphasised that the same method of correcting for gas unread must be used at the beginning and at the end of a period, and that the addition in respect of the unread gas at the end of one period must be deducted in respect of the next period.

Testing Consumers' Meters

Speaking of periodic *in situ* tests of consumers' meters he recalled a paper on unaccounted-for gas which he gave to the old Eastern Section of the Southern Association 21 years ago, before the Press were invited. A private note available to members recorded a remark by the late Stephen Lacey—'My own feeling is that most of the unaccounted-for gas goes in the shape of unregistered gas at low rates.' Attention was drawn to the desirability of seeing that meters were not overloaded having regard to the tendency for them to read slow as a result. The most important question referred to the Sub-Committee was that of preventing or minimising leakage. Whatever the source the amount of leakage would increase with the increase in pressure in the system, and he emphasised the importance of this, particularly where it was proposed to use an old lead jointed main as a transmission main and work it at high pressures. The desirability of fitting leak clamps should be in mind when the proposal was under consideration and not delayed until later when it was found that the pipe joints were beginning to leak badly under the higher pressure conditions.

The importance of giving urgent and thorough attention to the detection and stoppage of escapes was dealt with fairly exhaustively in the report. To encourage the reporting of escapes, the South Eastern Gas Board, continuing the practice of some of the London undertakings vested in it, paid a small reward to anybody reporting an escape, provided that the escape was found to be before the meter. The reward was sought by people of all classes, including many users of high-class and expensive notepaper. In conclusion, Lieut.-Colonel Gould referred to a change in the calculation of benzole equivalents. In the new report 1 gal. of crude benzole was taken to be equivalent to 45 cu.ft. of benzole vapour, or to 1.6 therms, as against 40 cu.ft., or 1.4 therms, in the interim report.

Mr. A. Collinson (Peterborough) mentioned the difficulties arising out of condensation in very large meters. Many such meters were in use under conditions which conduced to the formation of condensation, but there were difficulties about their removal for periodic examination because they had to be stamped afterwards. He suggested representations at high level with a view to removing such difficulties.

An Accountant's Point of View

Mr. H. H. Tongue (Divisional Accountant, Cambridge) said as an accountant he was interested in the problem of calculating the quantity of unread gas rather than the quantity of gas unaccounted-for, and his main comment on the report was that the former, having been calculated, must continue to be re-calculated until it balanced with the predetermined unaccounted-for figure as mentioned at the end of the report. The methods of calculation detailed in the report were, however, based on a more scientific approach than had been practised generally in the past, and as such were welcomed.

The sales and service departments of the industry could be of the greatest possible assistance in minimising the unaccounted-for gas, and he wondered whether the maximum use was made of consumers' record cards. The cards should be used, in addition to the usual purposes, to ensure that meters were not being overloaded and were not of too ripe an age. In some districts, especially rural ones, such records were not yet available and the report should be an incentive to introduce them as early as possible. Another factor affecting the unaccounted-for gas was the meter which registered correctly at capacity and thus secured a 'correct' test certificate but which did not either register, or registered incorrectly, when passing gas at less than capacity. There had been such cases at Cambridge lately and in such circumstances the Board was precluded from recovering other than the recorded consumption with consequent loading of unaccounted-for gas. No doubt that was an aspect which was receiving the attention of the meter manufacturers.

Unscientific Methods

Mr. E. O. Rose (Divisional Engineer, Tottenham) said that while the engineer was concerned only with seeing what he could do to reduce the unaccounted-for, the accountant approached the subject from a different angle and wanted to know at the end of every accounting period exactly where his balance-sheet stood and what was the amount of unread gas. It seemed to him that the method of allowing for unread gas was most unscientific, and he wondered whether the Sub-Committee had considered the possibility of establishing a proper algebraic system. He also wondered whether they had taken enough account of leaky gasholders. Some undertakings divided responsibilities between the engineer, who was in charge of manufacture, and the distribution officer who was in charge of the district. When gas was passed into holders it became a matter for the distribution and accounting side but it was still under the charge of the engineer. If, for convenience, a holder was blown it did not upset the engineer's carbonising figures but it made a big difference to the unaccounted-for. So far as the distribution system was concerned it was all a matter of regular and steady maintenance. The ideal of relaying mains every 25 or even 40 years had not been attained, and with prevailing shortages of materials he doubted whether they would be laid in 100 years. In any case they could not hope to reap the benefit of today's expenditure within 10 years, neither could they escape the results in 10 years' time of neglect to spend money today.

Mr. W. A. Evetts (Divisional Engineer, Watford) said they must get as correct an appraisal as possible of unread gas if they were to find out what the unaccounted-for was, and the engineer, as well as everyone else in the undertaking, must take an interest in the unread gas. Most of the methods he knew of appraising unread gas were based on an attempt to correlate the period of the meter reading with the gas manufactured during that period, and fundamentally that was the method in use in the old Watford and St. Albans Company and now adopted by the Eastern Gas Board.

The Watford System

Consider a group of quarterly consumers whose meters were read on the first day of a new quarter, say, October 1. The gas registered would be that consumed during the previous three months—*i.e.*, July 2 to October 1 (inclusive). It was reasonable to assume that this consumption would bear a close relation to the gas manufactured during the same period. If the gas made during the period—*i.e.*, July 2 to October 1 (inclusive)—was compared with the gas made during the current quarter—*i.e.*, October 1 to December 31 (inclusive)—and a

factor thereby obtained, and the same factor applied to the consumption recorded by a group of consumers' meters, a figure would be obtained which should closely represent the gas those consumers would have taken during the current quarter, October 1 to December 31. The assumption was of course here made that on any one day the meters read were an average of the whole. Similarly, the meters read on the second day could be related to the gas manufactured during that period and a correction applied.

If this procedure was adopted for each day, the figures so obtained should represent a close approximation of the gas actually consumed for the quarter. As this was a somewhat laborious method, an alternative was adopted.

For each day in the quarter, the aggregate of the gas made during the previous three months was ascertained. These aggregates were totalled and divided by the number of days in the quarter; an average aggregate would then be obtained. This average aggregate was then compared with the aggregate, October 1 to December 31, and a factor obtained. The quarter's rental, which was in effect the sum of the daily groups of consumers' meter readings, could be compared with the average aggregate of the gas production, and if the factor obtained was applied to the rental figure, the corrected figure would give a close approximation to the actual consumption.

Ascertaining Unread Gas

The quarter's rental having been adjusted in this manner, it remained to ascertain the unread gas. If meters were read at an even daily rate throughout the quarter, the gas rental would represent approximately the gas consumed between the middle date of the preceding quarter and the middle date of the current quarter, and there would be unread half a quarter's gas at the end of each quarter. As the gas demand would be rising or falling during the quarter, according to the season of the year, it would be incorrect to base the accrual on the average day during the quarter. A correction must be applied to adjust the unread gas to the rising or falling demand. If they considered again the December quarter, consumption was normally rising throughout the period. The consumption during the last half of the quarter was greater than the consumption during the first half. Here again they could take the gas manufactured as a yardstick. Compare the gas made during the period for which the unread gas was required, with the gas made during the whole quarter and obtain a factor. Apply this factor to the adjusted rental and the figure obtained would represent the unread gas. This procedure was adopted for the various classes of consumer.

In the Institution report, the division of percentage of the total rental consumed by the various groups of consumers was not based on the rental corrected for unread gas. Therefore the division was not absolutely true and that was perhaps a weakness in the method recommended. The assumption of a figure for leakage had been criticised as unscientific and the rather laborious procedure of having to re-calculate on a new leakage figure, if the figures were not in balance, was also criticised. However, he did not think that this was so bad as it looked. A previous speaker had suggested that an algebraic formula could be obtained to overcome the work involved in re-calculation. It would be found that if two attempts were made, with the figures for leakage sufficiently wide apart, the answer could be obtained graphically.

Saving of Time

The essential difference between the Watford method and that recommended in the Institution report was that the adjustment for unread gas was based on the rental, and leakage was the amount remaining; and there was, therefore, no necessity to assume a leakage figure. In practice both methods gave substantially the same result. In a district where both the method recommended in the Institution report and the Watford method were tried, it was found that the time required for the latter method was 3½ hours compared with 10 hours for the former method.

Mr. L. C. Harcourt (Assistant Area Accountant) said that at the headquarters of the Eastern Gas Board a sub-committee had been appointed to study the question of unaccounted-for gas, comprising engineers and accountants. The report had been studied in detail, and on the engineering side the Board was quite happy. His only query concerned the stepping up of the benzole equivalent; was that because the plants were becoming more efficient or was it a different method of approach?

When they came to the question of unread gas and its calculation they felt they ought to start off by assuming the unaccounted-for. They agreed to adopt the Watford method, and he understood that the time taken was only about a third of that involved in the Institution method, although he believed that the ultimate answer was virtually the same—a fact which proved the efficiency of both methods.

Small Daily Calculation

Mr. F. Allen (Group Manager, Colchester-Clacton Group) said he had nothing but praise for the practical and comprehensive manner in which the Institution Sub-Committee had tackled the subject, but he thought the work involved in the calculations was very considerable for small districts with limited clerical staffs. To meet that difficulty they were assisted by having the opportunity of studying a further scheme to calculate unread gas at the end of a quarter. That seemed more simple to operate but was possibly not quite so accurate in estimation as the Institution scheme. Even that scheme had some complications and they tried a calculation of their own on the prepayment meters of one district which read its prepayment meters twice per quarter. The route sequence was the same on each occasion and the majority of meters were read at intervals ranging at different times of the year from 42 to 48 days. The district normally recorded a daily total in cu.ft. of gas as well as cash collected.

They found that all the meters read on February 17 had previously been read on January 2. They got a daily average figure of consumption by dividing the gas recorded by readings and collections on that day by 46, being the number of days of use and multiplied the result by 44, the number of remaining days in the quarter. That was done for each day with a naturally reducing multiplication factor. At the end of the quarter there were very few unread prepayment meters but a small calculated average quantity was added for them. They calculated the percentage difference in the quantity of corrected gas sent out from the works between January 1 and February 17, when they started meter reading, and between February 17 and March 31 and corrected their total unread gas by the same percentage.

Then they checked their figures by the other suggested methods and found that at the worst they were nearly 2% low in their estimate of unread gas. They finally consoled themselves with the thought that with so many possibilities of erroneous factors in each system their guess was probably reasonably good and as likely to be accurate as the others. Their method lent itself to a small calculation every day and very little additional clerical work at the end of the quarter. If they proved that 366 days on each consumer's meter were reasonably equal to 366 days' gas making, even if they were different days, they did not think it beyond the ingenuity of any district manager to arrange at least his annual readings on that basis and possibly eliminate the need for calculation of unread meters. A study of works outputs about March supported the view that this was quite possible anyhow on the smaller districts and apparently only the incidence of a movable feast like Easter could upset the figures.

Meter Manufacturer's Viewpoint

Mr. W. D. Wilson (George Wilson Gas Meters, Ltd.) recalled that Walter Hole, in his publication in 1907, quoted an average unaccounted-for figure varying from 5.5% to 10.1% in the British Isles. In 1941 the American Gas Association reported that the figure was 14% in the seven southern States—a figure which seemed to him to be complimentary to our own industry. Speaking from the limited field of the meter manufacturer, there seemed to be two methods for the checking of meters *in situ*—(1) the precise and accurate method by the use of test meters and other appliances, and (2) the improvised method using a flat flame burner, as suggested in the report, or the calibrated jets, and possibly the aids now provided by mechanical bookkeeping for 'spot-lighting' meters suspected of registering slow. He felt, however, that although Lieut.-Colonel Gould had spoken of the difficulties of constituting the Committee it would have been helpful if it could have been broadened to include representatives of the meter manufacturing industry, since it was important to remember that the

(*Continued on p. 53*)

quality and condition of gas varied between area and area, and between one undertaking and another within the same area. Only meter makers were therefore able to give information on the general position, and it might even be desirable that members of the Committee should visit various works to see the actual condition of the meters which were received for repair.

Effects of Impurities

So far as the meter was concerned in the problem of unaccounted-for gas, were it not for those conditions it would be comparatively easy to design a meter to conform to any given set of circumstances. Meter manufacturers, however, could not do this since they must supply a measuring appliance suitable for universal use. As an instance of the difficulty, by the re-design of the grids and covers, pressure losses and oscillation could be improved, but other difficulties would arise. The suggestion that leathers might be shrunk to give the meter a tendency to run fast might at first sight appear attractive, but would bring in its train many other complications which might easily result in the last state being worse than the first. He did not think overloading of meters was a matter of paramount importance. He had been told by a high official in the industry that the average peak consumption by domestic meters today was 40 to 60 cu.ft. per hour. The main difficulty with which manufacturers had to contend was that of impurities in the gas which could have a general detrimental effect on the meter and in particular could affect the meter slide valves by either 'scouring' them or causing them to lift. That particular problem was one which the meter manufacturer was obliged to pass back to the industry for a solution.

Importance of Reconciliation

Mr. E. H. Winch (Divisional Liaison Engineer, Cambridge) said the more one looked into the question of calculating the amount of gas lost the more one was impressed by the considerable number of factors which affected the accuracy of the calculation, and by the fact that there must always be certain assumptions which prevented a precise calculation being made, the accuracy of which could be proved conclusively. Apart from the difficulty of accurate determination of average temperatures and pressures there was the much greater problem of relating the period covered by consumptions recorded in the consumers' meters to the strict calendar quarters or years. It was easy enough to read station meters at the end of a quarter or year but it was physically impossible to read all consumers' meters on the last day of a period, and some estimate must be made to reconcile the two sets of recorded consumptions. The importance of reconciliation had become greater with the more extensive application of continuous reading of consumers' meters.

Even the method given in the report depended on certain assumptions, since the percentages of gas consumed by different consumer groups was assessed on the actual recorded consumptions of those groups over periods which could not be a strict calendar quarter or year. While the error caused by that assumption might not always be a serious one, it could be quite material where there was a preponderatingly space-heating load, domestic or industrial, or an irregular industrial load. That was one of the factors which influenced the Sub-Committee of the Eastern Gas Board to recommend the adoption of the method used at Watford for calculating unread gas, which must be determined as accurately as possible before a reasonably accurate figure for unaccounted-for gas could be arrived at. It would be generally agreed that since unaccounted-for gas could not be determined with absolute precision the most suitable method of calculation was the one which would achieve reasonable accuracy with the minimum expenditure of time in collecting information and making calculations.

Testing Station Meters

He emphasised the importance of regular testing of station meters, especially wet meters. Post-nationalisation experience had revealed that wet meters in small works could not have been tested because there was no provision for test connections, and when tests had been made the existence of perforated drums had been revealed, accounting for appreciable errors in registration resulting in a false complacency regarding the extent of unaccounted-for gas in the districts concerned.

The present high cost of production of gas gave added importance to the reduction of the unaccounted-for figure, since 7% unaccounted-for necessitated an increase in price of just over 1d. per therm on gas costing 15d. to produce and distribute. A well laid and maintained distribution system should not account for more than 1% loss of gas, and that seemed all the more reason why they should resist as much as possible the tendency to use more 3 in. mains at present because of scarcity of cast iron pipe. Figures published in the technical Press gave adequate support to the contention that 3 in. cast iron was much more susceptible to fracture than the larger sizes of main. Finally, he wondered if Lieut.-Colonel Gould would agree that normally the biggest potential sources of leakage lay between the mains and the point of consumption and that the biggest sources of unaccounted-for gas were probably not leakages at all but inaccuracies in meter registration and in estimation of unmetered consumption like public lighting.

Problem of the Smaller Works

Mr. J. T. Brookes (Norwich) said that in the matter of unaccounted-for gas the smaller the works the greater was the problem. A great deal of the unaccounted-for was accounted for before the gas left the works. There was inevitably a reduced amount of supervision on the smaller works, and although it would be wrong to assume that there was any real neglect it was easy to see how one man left in charge of the works at night might incur anything up to 4% unaccounted-for. He advocated the fitting of tell-tale gauges on holders. The question of consumers' meters led to a study of loss of gas due to inaccurate registration of the meters or the passing of unregistered gas. In many instances where the send-out had been increased they had failed to see any corresponding reduction in the unaccounted-for figures. In the Norwich district they had started a series of *in situ* tests and the results so far were very encouraging. They did not anticipate that the initial figures would be maintained but they were satisfied that the tests should be continued.

Mr. D. W. Ault (Divisional Engineer, Lincolnshire, East Midlands) suggested that the discussions at meetings of the District Sections of the Institutions did a lot of good. Before any of the Sections had discussed this Report the East Midlands Board had laid it down that all station meters should be tested every two years. A short time ago the Midland Section discussed the Report and now an edict had been issued that the station meters should be tested every year. Reference had been made to the adaptation of low pressure mains for medium high pressure transmission, but no indication had been given as to the dividing line; was it 15, or 30, or 60 lb./sq. in.? At what stage did they begin to worry about leakage from old joints?

Lieut.-Colonel Gould's Reply

Lieut.-Colonel Gould, in a brief reply to the discussion, said he knew of no statutory reason for difficulty in regard to dealing with condensation in larger meters. He agreed with Mr. Tongue as to the value of consumers' record cards. Much attention had been paid to the testing of meters and the Sub-Committee had had the benefit of information from the Chairman of the Meters Committee of the Institution, Mr. J. T. Haynes. There appeared to be a tendency for new meters to read fast and for meters to read slow when overloaded. Regarding Mr. Rose's suggestion that the problem of the calculation of unread gas might be solved algebraically, the North Thames Gas Board had some clever people, and he would put the question to them.

Reference had been made to the Watford method of calculating unread gas; on the question of the time taken compared with that for the Sub-Committee's system he asked for a copy of the Watford method for submission to the Sub-Committee. The reason for the change in the benzole figures was that the Sub-Committee had been advised that as a result of experience the figures should be adjusted. The point raised by Mr. Wilson about the representation of meter makers on the Sub-Committee was a very good one. Mr. Winch had mentioned the effects of temperature and pressure. A temperature change of 5° made only 1% difference in unaccounted-for gas, and a difference of 1 in. in pressure made a difference of only 0.25%. In answer to Mr. Ault he was of the opinion that 35 to 40 in. pressure was the highest possible line of demarcation between low and medium high pressure.

Mr. F. A. Rhead (Senior Vice-Chairman) proposed and **Mr. C. E. Grimwood,** (Sudbury) seconded a vote of thanks to Lieut.-Colonel Gould for introducing the Report.

In well-designed kitchens...

The Main No. GF91 Gas-Heated DEEP FAT FRYER illustrated is specially suitable for frying meats, rissoles, poultry, fish, potatoes, etc. It has a large-capacity one-piece pan of enamelled heavy cast-iron, a cool crumb-well being an important feature of the pan.

Its vitreous enamelled casing is fully-insulated and is mounted on vitreous enamelled cast-iron legs.

The Mainstat heat control and the temperature guide with splash-shield are located on the front.

The GF91 Fryer is complete with lift-off cover, wire basket, drain valve, main and pilot taps, burner and calorific-value adjuster.

If you have any catering problem, large or small, write to R. & A. Main Ltd. They offer you the benefit of their long experience in the equipping of Kitchens, Canteens, etc. Layouts and estimates of cost will be gladly prepared on request.

MAIN

COOKING APPARATUS AND KITCHEN EQUIPMENT

Gas and Steam

R. & A. MAIN LIMITED

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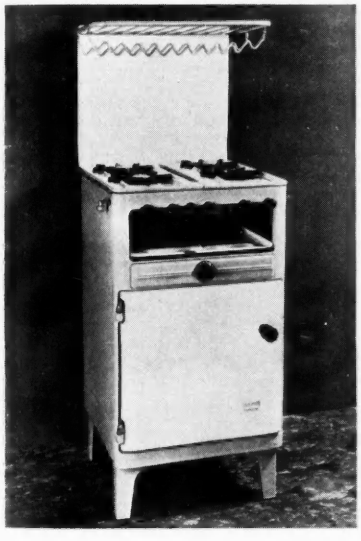
M.3

TRADE NEWS

New Parkinson Cooker

THE Parkinson Stove Co., Ltd., has introduced to the public this month a cooker—the 'Paragon' designed and produced with the basic aim of making the housewife's task easier. Produced as a medium priced cooker, of quality and modern design, the 'Paragon' is designed to have a strong appeal to the family with a limited income.

Gas consumption economy is ensured by an Ajusto automatic oven-heat control, fitted centrally over the oven door. Maximum heat for minimum gas consumption is also assured with the four high efficiency boiling burners, and the large capacity, high speed grill burner. To prevent accidents, the hotplate top and loose trivets have been so designed that even the smallest pan will not tip over; also, the two large front boiling burners are interchangeable, as are the two smaller back boiling burners.



Efficiency of performance in the new 'Paragon' can be found in the large oven with side opening door, in the grill burner, and in the hotplate. An additional feature is the gas taps, each of which has been fitted with a safety-lock. Designed as a safety measure to prevent a tap being turned on accidentally and also as a precaution against an unsuspecting child, the safety-lock device also eliminates the risk of escaping gas from an imperfectly closed tap. Before a tap can be turned to an 'on' position, it must be pressed inwards.

Its streamline design, blending with any colour scheme or surrounding, makes the 'Paragon' a worthy asset to a kitchen. Modern in every aspect, it has light grey mottled vitreous enamelled sides, front, top bars, oven linings, and leg shields; white vitreous enamelled door panel and fixed (or loose) oven crown tray; and black vitreous enamelled hotplate burners and loose hotplate trivets.

The 'Paragon' has a cast iron front frame, sheet steel sides, and galvanised sheet back built on to a welded angle iron chassis, while the oven door, sides, back, and crown are insulated with blanket glasswool. Hotplate dimensions are 19⅝ in. wide and 17¼ in. deep with two large front boiling burners consuming 12,000 B.Th.U. per hour and two small back burners consuming 7,500 B.Th.U. per hour. The high speed grill consumes 13,000 B.Th.U. per hour—and is finished in black vitreous enamel.

Overall height of the 'Paragon' is 52⅝ in.; width is 22 in.; and depth 23 in. Oven depth is 13¼ in. and the oven door opening has a height and width of 16 in. —*Parkinson Stove Co., Ltd., Stechford, Birmingham, 9.*

Kleenoff

WE received recently from the Kleenoff Company a sample bottle of kettle descaler. We carried out a rough spot test of this new product on two quite ordinary domestic kettles—one electric and the other on the fast-boiling burner of the gas cooker. The results are recorded below, times being taken to the nearest ¼ minute and the kettles being filled initially with cold water from the main tap.

TIME TAKEN TO BOIL 2½ PINTS OF WATER FROM COLD (MINS.)

Before de-scaling		After de-scaling	
Gas	Electric	Gas	Electric
11	13	9¼	12½

Although by no means all the scale had been removed in the single treatment there was substantial benefit in the case of the gas heated kettle (about 15% less time to boil) and a slight gain in the case of the electric kettle. It should be mentioned that both kettles had been in service for approximately the same period, though the gas heated one had had rather greater use. While the test showed that the fluid succeeded in removing the greater part of the scale from the sides and bottoms of both kettles—which was, of course, to the advantage of the gas-heated one—it was less successful in removing all the hard crust round the heating element of the electric kettle. The de-scaling takes some time since the operation of the fluid, as judged by its effervescence, continued in our tests for approximately three-quarters of an hour, after which the kettle has to be re-filled with clean water and boiled for a further five minutes with a knob of soda.

There is no question of the effectiveness of this Kleenoff product. The descaler was on show at the Ideal Home Exhibition where it created a good deal of interest and has subsequently been in considerable demand. — *Kleenoff Company, 7, Crompton Way, Manor Royal, Crawley.*

Diffusion Alloys

A NEW process for chromium diffusion has been developed by Diffusion Alloys, Ltd. Chromium diffusion is carried out in a furnace by a method somewhat similar to case hardening, with the difference that it is the chromium which penetrates the surface of the steel processed.

The penetration of chromium varies in depth, and depends on the nature of the steel base, and the time and temperature of treatment.

The chromium diffused layer consists of a ferro-chrome alloy (from 0.001 in. to 0.012 in. deep), averaging 30% chromium.

One particularly interesting aspect of the process is that for all practical purposes there is no increase in the size of the articles treated. For that reason it lends itself perfectly to the treatment of threaded parts, which can be chromium diffused in their finished size.

Most British Standard Specification steels can be processed, provided their content of impurities (such as phosphorus and sulphur) is small, as for instance in E.N. 32.

Another important aspect of the process is its numerous applications on ordinary mild steel. Chromium diffused mild steel is annealed during processing and, although the diffused surface layer is tough and hard, it is also ductile; for example, a 24 S.W.G. mild steel plate after treatment can be bent 90° and more without danger of cracking the coating. Welding after treatment offers no difficulty.

While resistance to acid and atmospheric corrosion is one of the results attained, steels containing a high percentage of chromium offer a high resistance to oxidation at elevated temperatures. Many types of heater parts, such as perforated plates, assembly rods, and generally parts which have to stand up to temperatures reaching 900°C. are being processed and results obtained have been excellent.

The application of chromium diffusion to tools and parts requiring high resistance to wear and abrasion is rapidly becoming a major outlet for the process. As a rule, this type of surface alloy can be obtained on most steel specifications containing between 0.35% and 1.5% carbon, with or without alloying elements.—*Diffusion Alloys, Ltd., London Bridge House, London, S.E.1.*

B.I.F. Catalogue

So heavy has been the demand from overseas buying houses and exporters in Britain for this year's advance editions of the British Industries Fair catalogue, that the Fair organisers have printed an extra 5,000 copies for sale at 3s. 6d. each. It has also been arranged, for the first time, that final editions of the catalogue will be available in advance of the official opening of the Fair on May 5. Overseas buyers, on production of their invitations or trade cards, will receive catalogues free from British Industries Fair, Finance Division, Lacon House, Theobalds Road, London, W.C.1.

(*Further Trade News on page 56*)

TRADE NEWS—(Continued)

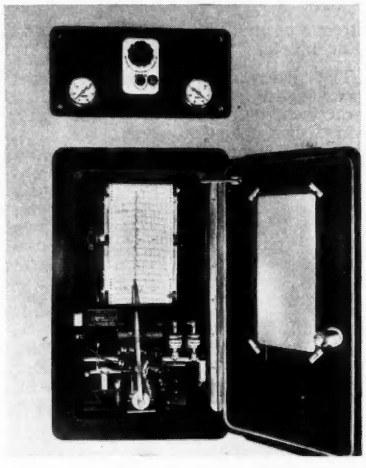
Sigma-Kent

THE load on gas-making plant has since the war increased considerably, whereas gasholder capacity in most works has not kept pace with this rise in demand. Because the gas is moving through the holder more rapidly, variations in calorific value are not smoothed out so effectively as previously. This necessitates a tighter control on the calorific value of the gas before it enters the holder. Another case where strict control of gas calorific value is necessary is where gas is being fed into grid systems directly from coke oven batteries.

To meet these needs, a new recording and controlling instrument for gas calorific value has been developed by the Sigma Instrument Company and George Kent, Ltd. Known as the Sigma-Kent controlling calorimeter, the apparatus is being marketed by George Kent, Ltd.

The two basic parts of the controller are the new Sigma Mark 2 calorimeter and the Kent Mark 20 pneumatic control unit. The calorimeter is made up of a gas flow regulator, measuring device and recording mechanism, the function of the regulator being to supply gas to the measuring device at a rate which would be constant if reduced to standard temperature and pressure (60°F. and 30 in. mercury). The regulator also provides automatic compensation for changes in gas specific gravity and ambient temperature.

The gas passes from the regulator to a burner in the measuring device. The burner is at the bottom of a vertical steel tube through which the products of combustion pass to atmosphere. This tube is contained within a second steel tube concentrically mounted; and the lower



Calorific Value Controller and Recorder.

ends of both tubes are rigidly joined together, the upper end of the outer tube being fixed to the instrument case. A bar attached to the upper end of the inner tube transmits the relative expansion or contraction of the inner tube to the recording linkage. This relative movement is directly and immediately consequent on changes in the calorific value of the gas being burned. Ambient temperature changes have no effect on the apparatus because in this instance both tubes respond equally and no motion occurs at the upper end of the inner tube. The relative movement of the inner tube is magnified many times by the recording linkage, giving adequate motion to the pen of the recorder mechanism on the chart. In order to overcome slight zero errors sometimes associated with large changes in barometric pressure, there is fitted a combustion air compensating device which renders the calorimeter unaffected by barometer variations of over 4 in. of mercury.

The Kent control mechanism is fitted within the instrument case. A control setting pointer is mounted concentrically with the recorder pen, and the controller instantly detects, and takes action to correct, any deviation between the pen and the pointer. The deviation is converted into an air-pressure change within the controller system which moves a control valve in the diluent gas main to correct the calorific value of the gas. Proportional, integral, and derivative functions of the controller ensure that the calorific value is returned to the control setting in the shortest possible time without overshoot in the opposite direction. The control valve usually employed is a butterfly valve operated by a power positioning cylinder.—*George Kent, Ltd., Luton and London.*

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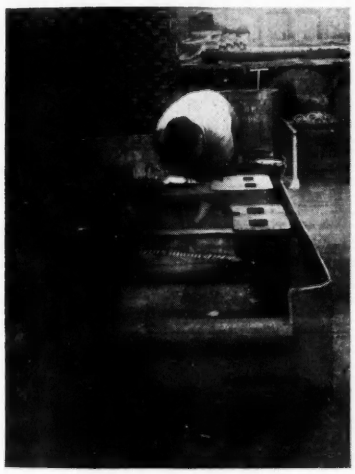
Metalock (Britain), Ltd.

SINCE 1947, when the process was introduced to this country, many thousands of pounds must have been saved in time and money in British industry by the Metalock method of cold repairs to broken castings. Repairs have been effected to a wide range of broken castings, including machine tool frames and bedplates, engine cylinders and liners, pressure vessels, crankshafts, and numerous kinds of industrial process equipment. In nearly every case these repairs are guaranteed. The main advantages of Metalock can be summarised as follows:—

(i) It dampens and absorbs compression stress and spreads tensile strain. It provides a good expansion joint for such jobs as cylinder liners.
(ii) It distributes the load away from the fatigue point.
(iii) It maintains relieved conditions of inherent internal stress where the cracking occurred.
(iv) It provides a low coefficient of expansion against repaired metal.
(v) It maintains alignment and original surfaces and obviates machining.
(vi) Work can be done on site, with saving in time and dismantling.



Repair of a 76 in. fracture in an Acme Gridley auto. Thickness of metal (cast iron) 1¼ in. Two Metalock operators started work on February 19 and completed the job on February 22.

The process has no connection with welding and is in no way a substitute; it is a method of repair based on entirely different principles.

Metalock has established depôts throughout the British Isles and operators can be obtained at very short notice in any area, and the gas industry has already called in Metalock operators on numerous occasions. Recent jobs carried out for the industry include 14 in. of fracture running through the flange and into the body of a cast iron tee piece of a C.W.G. plant for the Eastern Gas Board at the Southgate works. Work for the North Thames Gas Board, Fulham works, includes repair of 34 in. of fracture in a casting on a coal unloading crane, 76 in. of fracture in four castings of a C.W.G. generator and two fractures of 4½ in. and 5 in. on the end cover of an electric motor end casting.

Jobs undertaken for the South Eastern Gas Board include the cast iron housing of a gas fan, 48 in. of fracture to one steam cylinder casting and two pressure valve boxes, two fractures on the bedplate of a turbo-booster, and an external crack on one cylinder of a gas engine.

To effect a repair, the broken casting is, if necessary, first clamped to regain alignment. By means of a jig, lines of blind holes are drilled transversely to the fracture. These pilot holes are then opened out to size, the depth of the holes depending upon the thickness of the parent metal. The channel of metal in between the holes is removed by a special hand-operated pneumatic gun tool. The result is then a series of holes connected by parallel sections. Into the aperture thus formed, Metalock keys are driven one after the other in layers, and peened into the parent metal. The alloys from which the keys are produced have a known tensile strength, and the correct number of keys to be used to restore the original strength is a matter of close calculation.

The fracture between the locks is then drilled and tapped to receive Metalace studs in addition to the keys. In the case of pressure vessels, it is particularly important that these lacings should interlock very firmly one into the other. After the lacings are inserted, the whole repair is pneumatically cold worked to ensure perfect tightness and rigidity and the full surface ground flush.

A further application of this process is the Masterlock, which serves as a shock absorber, as well as replacing strength into sections of great and concentrated stress. The Masterlock is a block of special high tensile alloy around the perimeter of which runs a series of half round holes. This block is sunk into the cast iron, both surfaces being flush, the half round holes matching up with opposite numbers already machined in the parent metal. The resultant full holes are then filled with short alloy dowels which are again driven home and cold worked pneumatically.—*Metalock (Britain), Ltd., Grand Buildings, Trafalgar Square, London, W.C.2.*

Publications

We acknowledge with thanks the following:—

Air Control Installations, Ltd. Publication No. B.521, 'Airmat Dust Arrester,' and Publication No. B.515, 'Multi-Duty Air Filter.'

Broom and Wade, Ltd. Bi-monthly publication mainly about air compressors and pneumatic tools.

The Rawlplug Co., Ltd. Fixing Devices brochure (22nd Edition). Copies are available on request so far as stocks will permit.

The Glacier Metal Co., Ltd., has acquired the capital of Scottish Precision Castings, Ltd., Hillington Estate, Glasgow, manufacturers of aluminium and brass die castings. The latter company will retain its own name and identity, although its products will be sold in all markets at home and overseas through the Glacier commercial and sales organisation, which organisation is, in fact, already in contact with the main markets of Scottish Precision Castings, Ltd. Both companies already have many customers in common.

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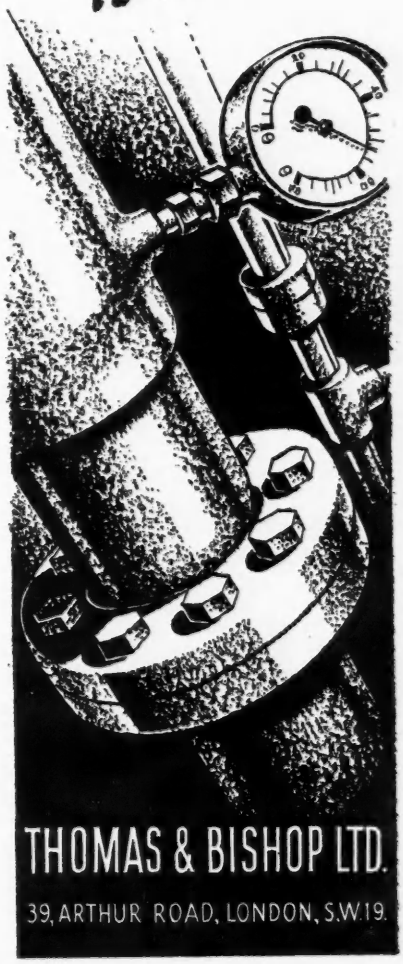

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